Kennecott Mine Waste Contamination

VICINITY MAP
(NOT TO SCALE)

Gold: 2013 mine waste sediment containing lead and arsenic

Lead: Toxic above 1200 ppm

Arsenic: Toxic about 100 ppm

1997 SEDIMENT AREA 1

2013 SEDIMENT AREA

2007 SEDIMENT AREA

1997 SEDIMENT AREA 2

HERRIMAN HWY

BUTTERFIELD CREEK

PIPELINE

INTERMITTENT STREAM

1997 SEDIMENT AREA

2007 SEDIMENT AREA

2013 SEDIMENT AREA

PROPERTY BOUNDARY

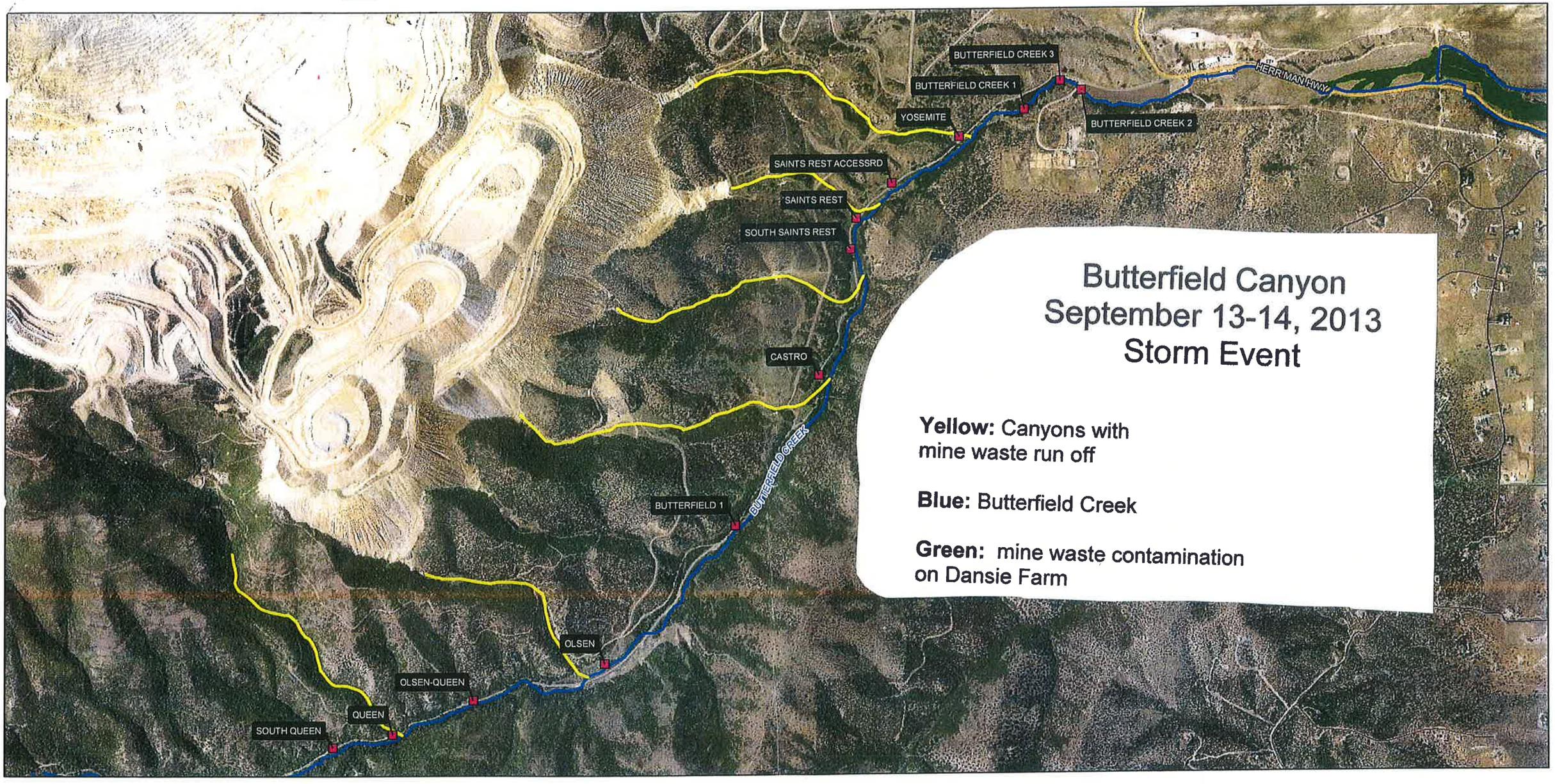
N

Feet

0 375 750 1,500

Designed By: SB	KENNECOTT UTAH COPPER	DANSIE PROPERTY SEDIMENT DEPOSITION FROM 1997 TO 2013 FIGURE 1
Drawn by: SB	ENVIRONMENTAL	
Project Eng: KC	Date: 10-23-2013	
Project Manager: BA	Project: DANSIE PROPERTY	

Map #



Butterfield Canyon
September 13-14, 2013
Storm Event

Yellow: Canyons with mine waste run off

Blue: Butterfield Creek

Green: mine waste contamination on Dansie Farm

SAMPLE LOCATIONS

STREAM

AFFECTED DRAINAGE

SEDIMENT DEPOSITION

N

Feet

0 1,500 3,000

92595

Designed By: SB	***KENNECOTT UTAH COPPER*** ENVIRONMENTAL	BUTTERFIELD CANYON STORM EVENT SEPTEMBER 13-14, 2013 FIGURE 1-4 BUTTERFIELD CANYON
Drawn by: SB		
Project Eng: KC	Dwg No.: 1-4	
Project Manager: BA	Project: BUTTERFIELD CANYON	

VICINITY MAP
(NOT TO SCALE)

ARSENIC LEVELS (IN PARTS PER MILLION)

- < 50 PPM
- 50 - 261 PPM
- > 261 PPM

LEAD LEVELS (IN PARTS PER MILLION)

- < 500 PPM
- 500 - 4414 PPM

DEEP SAMPLE
SURFACE SAMPLE

- STREAM
- PIPELINE
- INTERMITTEN STREAM
- SEDIMENT DEPOSITION
- PROPERTY BOUNDRIES

N

Feet
0 150 300 600

Designed By: SB	**KENNECOTT UTAH COPPER**	BUTTERFIELD CANYON STORM EVENT SEPTEMBER 13-14, 2013 FIGURE 4-1 PRIVATE LAND SAMPLE LOCATIONS
Drawn by: SB	ENVIRONMENTAL	
Project Eng: KC	Dwg No.: 4-1	
Project Manager: BA	Project: BUTTERFIELD CANYON	

Map 1

Lead: Toxic above 1200 ppm

Arsenic: Toxic about 100 ppm

DANSIE-3
ARSENIC: 197
LEAD: 2240

DANSIE-4
ARSENIC: 64
LEAD: 832
DEEP SAMPLE

DANSIE-5
ARSENIC: 250
LEAD: 1310

DANSIE-6
ARSENIC: 160
LEAD: 1510

DANSIE-7
ARSENIC: 62
LEAD: 1060
DEEP SAMPLE

DANSIE-1
ARSENIC: 125
LEAD: 1260

DANSIE-2
ARSENIC: 131
LEAD: 1100

DANSIE-10
ARSENIC: 191
LEAD: 1820

DANSIE-11
ARSENIC: 34
LEAD: 352
DEEP SAMPLE

DANSIE-8
ARSENIC: 140
LEAD: 1300

DANSIE-9
ARSENIC: 30
LEAD: 680
DEEP SAMPLE

DANSIE-12
ARSENIC: 271
LEAD: 2400

DANSIE-13
ARSENIC: 15
LEAD: 49
DEEP SAMPLE

DANSIE-14
ARSENIC: 288
LEAD: 2470

DANSIE-15
ARSENIC: 11
LEAD: 233
DEEP SAMPLE

DANSIE-16
ARSENIC: 307
LEAD: 2390

DANSIE-17
ARSENIC: 12
LEAD: 64
DEEP SAMPLE

DANSIE-20
ARSENIC: 243
LEAD: 2950

DANSIE-21
ARSENIC: 52
LEAD: 488
DEEP SAMPLE

DANSIE-18
ARSENIC: 265
LEAD: 3500

DANSIE-19
ARSENIC: 22
LEAD: 273
DEEP SAMPLE

DANSIE-22
ARSENIC: 120
LEAD: 1240

Hi Country Cir

High Country Rd

6800 W

VICINITY MAP
(NOT TO SCALE)

ARSENIC LEVELS (IN PARTS PER MILLION)

- < 50 PPM
- 50 - 261 PPM
- > 261 PPM

LEAD LEVELS (IN PARTS PER MILLION)

- < 500 PPM
- 500 - 4414 PPM

DEEP SAMPLE
SURFACE SAMPLE

STREAM
PIPELINE
INTERMITTEN STREAM
SEDIMENT DEPOSITION
PROPERTY BOUNDRIES

N

Feet
0 200 400 800

Health standards Salt Lake County
Lead Toxic above 1,200 PPM
Arsenic Toxic above 100 PPM

Designed By: SB	**KENNECOTT UTAH COPPER**	BUTTERFIELD CANYON STORM EVENT SEPTEMBER 13-14, 2013 FIGURE 4-2 - ARSENIC LEVELS PRIVATE LAND SAMPLE LOCATIONS
Drawn by: SB	ENVIRONMENTAL	
Project Eng: KC	Dwg No.: 4-2	
Project Manager: BA	Project: BUTTERFIELD CANYON	

Sampling and analytical data for samples collected from sediment eroded from Butterfield Canyon drainages into Butterfield Creek, storm sediment deposited in irrigated private land down gradient from the mouth of Butterfield Canyon and soil below where storm sediments were deposited on private land.

SAMPLE ID NO.	SAMPLE DATE	SAMPLE LOCATION/SAMPLE MATERIAL	SAMPLE TYPE/SAMPLE DEPTH	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Paste pH (standard units)	Cond. of Paste pH Solution (uS/cm)	Moisture % H2O (%)
Butterfield Canyon Drainage Samples															
SOUTH QUEEN-1	9/14/2013	SEDIMENT AT MOUTH SOUTH QUEEN DRAINAGE NEAR CONFLUENCE WITH BUTTERFIELD CREEK. UPPER REACHES OF DRAINAGE DOES NOT CONTACT WASTE ROCK.	GRAB. SURFACE.	42	191	<1	16	24	108	<0.1	<5	<5	8.29	140	10
QUEEN-1	9/15/2013	SEDIMENT AT MOUTH OF QUEEN DRAINAGE. SEDIMENT FLOWED INTO BUTTERFIELD SEVERAL HUNDRED YARDS DOWN GRADIENT FROM SAMPLE LOCATION.	3-POINT COMPOSITE. SURFACE.	199	270	4	25	148	1220	0.1	<5	7	7.52	590	11
OLSEN-QUEEN	9/15/2013	SEDIMENT AT MOUTH OF UN-NAMED DRAINGE BETWEEN QUEEN AND OLSEN.	4-POINT COMPOSITE. SURFACE.	136	160	3	11	56	443	0.2	5	<5	8.27	140	20
OLSEN-1	9/15/2013	SEDIMENT AT MOUTH OF OLSEN DRAINAGE NEAR CONFLUENCE WITH BUTTERFIELD CREEK.	3-POINT COMPOSITE. SURFACE.	95	80	4	23	987	1720	<0.1	<5	11	7.19	2170	20
BUTTERFIELD-1	9/15/2013	SEDIMENT FROM BUTTERFIELD DRAINAGE WHERE SEDIMENT CROSSED BUTTERFIELD CANYON ROAD AND FLOWED INTO BUTTERFIELD CREEK.	HORIZONTAL CHANNEL FROM 6 FEET LONG. SURFACE.	29	148	<1	12	134	226	<0.1	5	<5	8.34	1560	7
CASTRO-1	9/15/2013	SEDIMENT FROM CASTRO DRAINAGE WHERE SEDIMENT CROSSED BUTTERFIELD CANYON ROAD AND FLOWED INTO BUTTERFIELD CREEK.	3-POINT COMPOSITE. SURFACE.	106	253	<1	40	639	436	0.1	<5	<5	6.66	2280	42
SOUTH SAINTS REST-1	9/15/2013	SEDIMENT FROM SOUTH SAINTS REST DRAINAGE SAMPLED IMMEDIATELY UPGRADIENT FROM MOUTH OF SAINTS REST DRAINAGE WHERE THIS SEDIMENT CROSSED BUTTERFIELD CANYON ROAD AND FLOWED INTO BUTTERFIELD CREEK.	3-POINT COMPOSITE. SURFACE.	42	35	<1	10	659	34	0.2	<5	<5	2.96	2780	18
SAINTS REST-1	9/15/2013	SEDIMENT AT MOUTH OF SAINTS REST DRAINAGE WHERE SEDIMENT CROSSED BUTTERFIELD CANYON ROAD AND FLOWED INTO BUTTERFIELD CREEK.	3-POINT COMPOSITE. SURFACE.	56	93	<1	23	290	255	<0.1	<5	<5	5.72	2200	18
SAINTS REST ACCESS RD-1	9/15/2013	SEDIMENT THAT FLOWED DOWN ACCESS ROAD FROM BUTTERFIELD CANYON ROAD UP TO KUC EAST SIDE COLLECTION ALIGNMENT ROAD. SEDIMENT CROSSED BUTTERFIELD CANYON ROAD AT SAMPLE LOCATION FLOWED INTO BUTTERFIELD CREEK.	3-POINT COMPOSITE. SURFACE.	64	115	<1	26	252	589	<0.1	<5	<5	7.28	2300	18
YOSEMITE-1	9/15/2013	SEDIMENT AT MOUTH OF YOSEMITE DAINAGE NEAR CONFLUENCE WITH BUTTERFIELD CREEK. SEDIMENT ERODED SEVERAL HUNDRED YARDS DOWN THE BUTTERFIELD CANYON ROAD WHERE IT THEN FLOWED INTO BUTTERFIELD CREEK.	3-POINT COMPOSITE. SURFACE.	121	123	<1	26	409	4270	0.3	<5	<5	7.19	2260	26
BUTTERFIELD CREEK-1	9/15/2013	SEDIMENT IN BUTTERFIELD CREEK SAMPLED SEVERAL HUNDRED FEET DOWN-GRADIENT OF YOSEMITE DRAINAGE DISCHARGE INTO BUTTERFIELD CREEK.	2-POINT COMPOSITE. SURFACE.	85	101	1	23	422	1590	<0.1	<5	<5	7.25	2000	24
BUTTERFIELD CREEK-2	9/16/2013	SEDIMENT IN BUTTERFIELD CREEK AT ROAD CROSSING TO WILD HORSE AND BURRO CENTER, SAMPLE SITE IS ~30' DOWN-GRADIENT FROM CULVERT UNDER ROAD.	3-POINT COMPOSITE. SURFACE.	102	117	2	21	447	1100	0.1	11	<5	7.37	2200	28
BUTTERFIELD CREEK-3	9/16/2013	SEDIMENT IN BUTTERFIELD CREEK ADJACENT TO METAL GATE AT MOUTH OF BUTTERFIELD CANYON.	3-POINT COMPOSITE. SURFACE.	89	101	1	18	378	888	<0.1	9	<5	7.35	2100	25
Private Land Samples															
DANSIE-1	9/16/2013	SAMPLE COLLECTED OF STORM SEDIMENT DEPOSITED IN BUTTERFIELD CREEK IMMEDIATELY DOWN-GRADIENT FROM LATERAL DITCH THAT TAKES IRRIGATION WATER TO DANSIE PROPERTY.	3-POINT COMPOSITE. SURFACE.	125	147	3	30	624	1260	0.2	13	<5	7.33	2400	36
DANSIE-2	9/16/2013	SAMPLE COLLECTED OF STORM SEDIMENT IN DITCH ADJACENT TO DANSIE WELL #1.	3-POINT COMPOSITE. SURFACE.	131	173	3	28	450	1100	0.2	11	<5	8.04	2620	33
DANSIE-3	9/16/2013	SAMPLE LOCATION NORTH OF DANSIE WELL #1 IN IRRIGATED FIELD WHERE STORM SEDIMENT WAS DEPOSITED. SAMPLE WAS COLLECTED FROM 0-0.5" BELOW THE SURFACE.	3-POINT COMPOSITE. SURFACE.	197	235	3	43	905	2240	0.4	14	<5	7.17	2420	42
DANSIE-4	9/16/2013	SAME SAMPLE LOCATION AS DANSIE-3. COLLECTED FROM 1"-6" BELOW THE SURFACE FROM SOIL BELOW STORM EVENT SEDIMENT.	VERTICAL CHANNEL. 1" TO 6" BELOW THE SURFACE.	64	147	8	23	301	832	0.1	9	<5	7.62	1440	23
DANSIE-5	9/16/2013	SAMPLE LOCATION IS NORTHEAST OF DANSIE WELL #1 IN IRRIGATION DITCH. SAMPLED STORM SEDIMENT IN DITCH FROM 0-1" BELOW THE SURFACE.	3-POINT COMPOSITE. SURFACE.	250	244	3	41	1120	1310	1.1	14	<5	7.26	2790	49

Sampling and analytical data for samples collected from sediment eroded from Butterfield Canyon drainages into Butterfield Creek, storm sediment deposited in irrigated private land down gradient from the mouth of Butterfield Canyon and soil below where storm sediments were deposited on private land.

SAMPLE ID NO.	SAMPLE DATE	SAMPLE LOCATION/SAMPLE MATERIAL	SAMPLE TYPE/SAMPLE DEPTH	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Paste pH (standard units)	Cond. of Paste pH Solution (uS/cm)	Moisture % H2O (%)
DANSIE-6	9/16/2013	SAMPLE LOCATION EAST-NORTHEAST OF DANSIE WELL #1. SAMPLE COLLECTED FROM STORM SEDIMENT DEPOSITED IN FIELD . SAMPLE COLLECTED FROM 0-0.5" BELOW THE SURFACE.	3-POINT COMPOSITE. SURFACE.	160	170	3	32	752	1510	0.3	12	<5	7.56	1600	37
DANSIE-7	9/16/2013	SAME SAMPLE LOCATION AS DANSIE-6. COLLECTED FROM 1"-6" BELOW THE SURFACE FROM SOIL BELOW THE STORM SEDIMENT.	VERTICAL CHANNEL. 1" TO 6" BELOW THE SURFACE.	62	181	9	26	297	1060	0.2	8	9	7.12	2740	23
DANSIE-8	9/17/2013	SAMPLE COLLECTED FROM SEDIMENT DEPOSITED DURING STORM EVENT IN IRRIGATED FIELD. SAMPLE SITE IS LOCATED APPROXIMATELY 1/4 MILE NORTH OF SR111.	3-POINT COMPOSITE. SURFACE.	140	159	4	36	691	1300	0.2	11	<5	7.29	2260	31
DANSIE-9	9/17/2013	SAME SAMPLE LOCATION AS DANSIE 8. SAMPLE MATERIAL COLLECTED FROM 1"-6" BELOW THE SURFACE FROM SOIL BELOW STORM SEDIMENT.	VERTICAL CHANNEL. 1" TO 6" BELOW THE SURFACE.	30	175	4	27	142	680	<0.1	6	<5	7.69	1410	23
DANSIE-10	9/17/2013	SAMPLE COLLECTED FROM SEDIMENT DEPOSITED DURING STORM EVENT IN IRRIGATED FIELD. SAMPLE SITE IS LOCATED APPROXIMATELY 1/4 MILE NORTH OF SR111.	3-POINT COMPOSITE. SURFACE.	191	208	4	40	832	1820	0.3	8	<5	7.33	2500	42
DANSIE-11	9/17/2013	SAME SAMPLE LOCATION AS DANSIE 10. SAMPLE MATERIAL COLLECTED FROM 1"-6" BELOW THE SURFACE FROM SOIL BELOW STORM SEDIMENT.	VERTICAL CHANNEL. 1" TO 6" BELOW THE SURFACE.	34	183	3	26	98	352	<0.1	6	<5	7.87	950	21
DANSIE-12	9/17/2013	SAMPLE COLLECTED FROM SEDIMENT DEPOSITED DURING STORM EVENT IN IRRIGATED FIELD. SAMPLE SITE IS LOCATED APPROXIMATELY 1/4 MILE NORTH OF SR111.	3-POINT COMPOSITE. SURFACE.	271	291	3	52	1230	2400	0.8	14	<5	7.23	2420	46
DANSIE-13	9/17/2013	SAME SAMPLE LOCATION AS DANSIE 12. SAMPLE MATERIAL COLLECTED FROM 1"-6" BELOW THE SURFACE FROM SOIL BELOW STORM SEDIMENT.	VERTICAL CHANNEL. 1" TO 6" BELOW THE SURFACE.	15	152	<1	21	27	49	<0.1	5	<5	7.77	1290	20
DANSIE-14	9/17/2013	SAMPLE COLLECTED FROM SEDIMENT DEPOSITED DURING STORM EVENT IN IRRIGATED FIELD. SAMPLE SITE IS LOCATED APPROXIMATELY 1/4 MILE NORTH OF SR111.	3-POINT COMPOSITE. SURFACE.	288	322	3	50	1160	2470	0.9	14	10	7.14	2500	51
DANSIE-15	9/17/2013	SAME SAMPLE LOCATION AS DANSIE 14. SAMPLE MATERIAL COLLECTED FROM 2"-6" BELOW THE SURFACE FROM SOIL BELOW STORM SEDIMENT.	VERTICAL CHANNEL. 2" TO 6" BELOW THE SURFACE.	11	163	<1	21	48	233	<0.1	5	<5	7.74	1320	15
DANSIE-16	9/17/2013	SAMPLE COLLECTED FROM SEDIMENT DEPOSITED DURING STORM EVENT IN IRRIGATED FIELD. SAMPLE SITE IS LOCATED APPROXIMATELY 1/4 MILE NORTH OF SR111.	2-POINT COMPOSITE. SURFACE.	307	343	2	54	1220	2390	1	10	<5	6.84	2410	51
DANSIE-17	9/17/2013	SAME SAMPLE LOCATION AS DANSIE 16. SAMPLE MATERIAL COLLECTED FROM 1"-6" BELOW THE SURFACE FROM SOIL BELOW STORM SEDIMENT.	VERTICAL CHANNEL. 1" TO 6" BELOW THE SURFACE.	12	103	<1	14	56	64	<0.1	9	<5	7.86	790	4
DANSIE-18	9/17/2013	SAMPLE COLLECTED FROM SEDIMENT DEPOSITED DURING STORM EVENT IN IRRIGATED FIELD. SAMPLE SITE IS LOCATED APPROXIMATELY 1/4 MILE NORTH OF SR111.	GRAB. SURFACE.	265	322	3	56	1720	3500	0.7	13	<5	7.44	2700	56
DANSIE-19	9/17/2013	SAME SAMPLE LOCATION AS DANSIE 18. SAMPLE MATERIAL COLLECTED FROM 1"-3" BELOW THE SURFACE FROM SOIL BELOW STORM SEDIMENT.	VERTICAL CHANNEL. 1" TO 3" BELOW THE SURFACE.	22	177	<1	26	59	273	<0.1	6	<5	7.8	1040	12
DANSIE-20	9/18/2013	SAMPLE COLLECTED FROM SEDIMENT DEPOSITED DURING STORM EVENT IN IRRIGATED FIELD. SAMPLE SITE IS LOCATED APPROXIMATELY 1/4 MILE NORTH OF SR111.	3-POINT COMPOSITE. SURFACE.	243	240	5	57	1460	2950	0.4	14	<5	7.27	2650	40
DANSIE-21	9/18/2013	SAME SAMPLE LOCATION AS DANSIE 20. SAMPLE MATERIAL COLLECTED FROM 1"-6" BELOW THE SURFACE FROM SOIL BELOW STORM SEDIMENT.	VERTICAL CHANNEL. 1" TO 6" BELOW THE SURFACE.	52	134	6	20	177	488	<0.1	6	<5	7.73	740	23
DANSIE-22	9/18/2013	SAMPLE COLLECTED FROM SEDIMENT DEPOSITED IN A SMALL IRRIGATION DITCH THAT RECEIVED BUTTERFIELD CREEK IRRIGATION WATER DURING STORM EVENT. SAMPLE SITE IS LOCATED AT PULL OFF AREA ON SOUTH SIDE OF SR111.	3-POINT COMPOSITE. SURFACE.	120	164	<1	32	385	1240	0.1	10	<5	7.45	2480	17

Samples collected from soil below where recent storm sediment was deposited.

Sampling and analytical data for samples collected from sediment eroded from Butterfield Canyon drainages into Butterfield Creek, storm sediment deposited in irrigated private land down gradient from the mouth of Butterfield Canyon and soil below where storm sediments were deposited on private land.

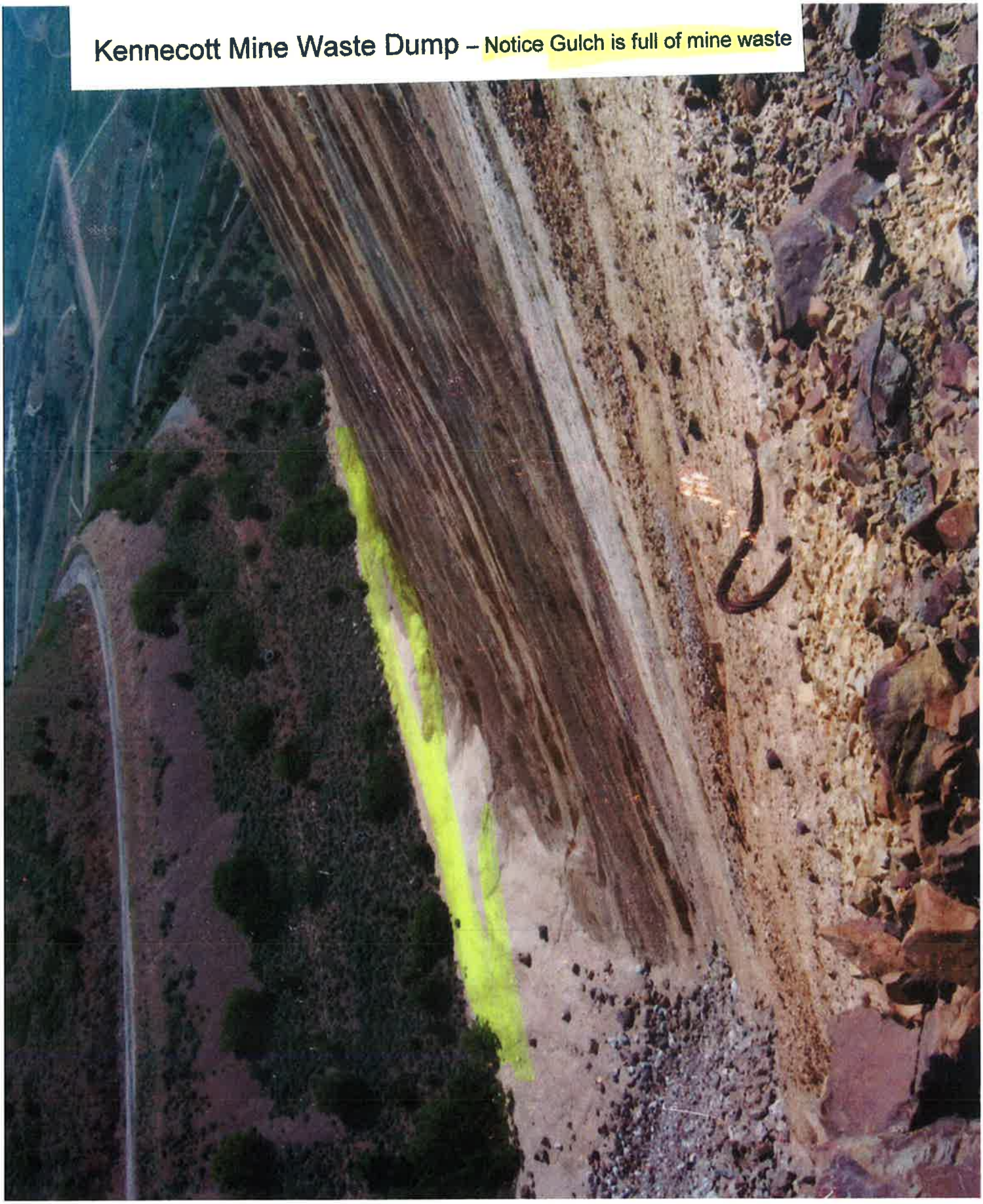
SAMPLE ID NO.	SAMPLE DATE	SAMPLE LOCATION/SAMPLE MATERIAL	SAMPLE TYPE/SAMPLE DEPTH	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Paste pH (standard units)	Cond. of Paste pH Solution (uS/cm)	Moisture % H2O (%)
DANSIE-6	9/16/2013	SAMPLE LOCATION EAST-NORTHEAST OF DANSIE WELL #1. SAMPLE COLLECTED FROM STORM SEDIMENT DEPOSITED IN FIELD . SAMPLE COLLECTED FROM 0-0.5" BELOW THE SURFACE.	3-POINT COMPOSITE. SURFACE.	160	170	3	32	752	1510	0.3	12	<5	7.56	1600	37
DANSIE-7	9/16/2013	SAME SAMPLE LOCATION AS DANSIE-6. COLLECTED FROM 1"-6" BELOW THE SURFACE FROM SOIL BELOW THE STORM SEDIMENT.	VERTICAL CHANNEL. 1" TO 6" BELOW THE SURFACE.	62	181	9	26	297	1060	0.2	8	9	7.12	2740	23
DANSIE-8	9/17/2013	SAMPLE COLLECTED FROM SEDIMENT DEPOSITED DURING STORM EVENT IN IRRIGATED FIELD. SAMPLE SITE IS LOCATED APPROXIMATELY 1/4 MILE NORTH OF SR111.	3-POINT COMPOSITE. SURFACE.	140	159	4	36	691	1300	0.2	11	<5	7.29	2260	31
DANSIE-9	9/17/2013	SAME SAMPLE LOCATION AS DANSIE 8. SAMPLE MATERIAL COLLECTED FROM 1"-6" BELOW THE SURFACE FROM SOIL BELOW STORM SEDIMENT.	VERTICAL CHANNEL. 1" TO 6" BELOW THE SURFACE.	30	175	4	27	142	680	<0.1	6	<5	7.69	1410	23
DANSIE-10	9/17/2013	SAMPLE COLLECTED FROM SEDIMENT DEPOSITED DURING STORM EVENT IN IRRIGATED FIELD. SAMPLE SITE IS LOCATED APPROXIMATELY 1/4 MILE NORTH OF SR111.	3-POINT COMPOSITE. SURFACE.	191	208	4	40	832	1820	0.3	8	<5	7.33	2500	42
DANSIE-11	9/17/2013	SAME SAMPLE LOCATION AS DANSIE 10. SAMPLE MATERIAL COLLECTED FROM 1"-6" BELOW THE SURFACE FROM SOIL BELOW STORM SEDIMENT.	VERTICAL CHANNEL. 1" TO 6" BELOW THE SURFACE.	34	183	3	26	98	352	<0.1	6	<5	7.87	950	21
DANSIE-12	9/17/2013	SAMPLE COLLECTED FROM SEDIMENT DEPOSITED DURING STORM EVENT IN IRRIGATED FIELD. SAMPLE SITE IS LOCATED APPROXIMATELY 1/4 MILE NORTH OF SR111.	3-POINT COMPOSITE. SURFACE.	271	291	3	52	1230	2400	0.8	14	<5	7.23	2420	46
DANSIE-13	9/17/2013	SAME SAMPLE LOCATION AS DANSIE 12. SAMPLE MATERIAL COLLECTED FROM 1"-6" BELOW THE SURFACE FROM SOIL BELOW STORM SEDIMENT.	VERTICAL CHANNEL. 1" TO 6" BELOW THE SURFACE.	15	152	<1	21	27	49	<0.1	5	<5	7.77	1290	20
DANSIE-14	9/17/2013	SAMPLE COLLECTED FROM SEDIMENT DEPOSITED DURING STORM EVENT IN IRRIGATED FIELD. SAMPLE SITE IS LOCATED APPROXIMATELY 1/4 MILE NORTH OF SR111.	3-POINT COMPOSITE. SURFACE.	288	322	3	50	1160	2470	0.9	14	10	7.14	2500	51
DANSIE-15	9/17/2013	SAME SAMPLE LOCATION AS DANSIE 14. SAMPLE MATERIAL COLLECTED FROM 2"-6" BELOW THE SURFACE FROM SOIL BELOW STORM SEDIMENT.	VERTICAL CHANNEL. 2" TO 6" BELOW THE SURFACE.	11	163	<1	21	48	233	<0.1	5	<5	7.74	1320	15
DANSIE-16	9/17/2013	SAMPLE COLLECTED FROM SEDIMENT DEPOSITED DURING STORM EVENT IN IRRIGATED FIELD. SAMPLE SITE IS LOCATED APPROXIMATELY 1/4 MILE NORTH OF SR111.	2-POINT COMPOSITE. SURFACE.	307	343	2	54	1220	2390	1	10	<5	6.84	2410	51
DANSIE-17	9/17/2013	SAME SAMPLE LOCATION AS DANSIE 16. SAMPLE MATERIAL COLLECTED FROM 1"-6" BELOW THE SURFACE FROM SOIL BELOW STORM SEDIMENT.	VERTICAL CHANNEL. 1" TO 6" BELOW THE SURFACE.	12	103	<1	14	56	64	<0.1	9	<5	7.86	790	4
DANSIE-18	9/17/2013	SAMPLE COLLECTED FROM SEDIMENT DEPOSITED DURING STORM EVENT IN IRRIGATED FIELD. SAMPLE SITE IS LOCATED APPROXIMATELY 1/4 MILE NORTH OF SR111.	GRAB. SURFACE.	265	322	3	56	1720	3500	0.7	13	<5	7.44	2700	56
DANSIE-19	9/17/2013	SAME SAMPLE LOCATION AS DANSIE 18. SAMPLE MATERIAL COLLECTED FROM 1"-3" BELOW THE SURFACE FROM SOIL BELOW STORM SEDIMENT.	VERTICAL CHANNEL. 1" TO 3" BELOW THE SURFACE.	22	177	<1	26	59	273	<0.1	6	<5	7.8	1040	12
DANSIE-20	9/18/2013	SAMPLE COLLECTED FROM SEDIMENT DEPOSITED DURING STORM EVENT IN IRRIGATED FIELD. SAMPLE SITE IS LOCATED APPROXIMATELY 1/4 MILE NORTH OF SR111.	3-POINT COMPOSITE. SURFACE.	243	240	5	57	1460	2950	0.4	14	<5	7.27	2650	40
DANSIE-21	9/18/2013	SAME SAMPLE LOCATION AS DANSIE 20. SAMPLE MATERIAL COLLECTED FROM 1"-6" BELOW THE SURFACE FROM SOIL BELOW STORM SEDIMENT.	VERTICAL CHANNEL. 1" TO 6" BELOW THE SURFACE.	52	134	6	20	177	488	<0.1	6	<5	7.73	740	23
DANSIE-22	9/18/2013	SAMPLE COLLECTED FROM SEDIMENT DEPOSITED IN A SMALL IRRIGATION DITCH THAT RECEIVED BUTTERFIELD CREEK IRRIGATION WATER DURING STORM EVENT. SAMPLE SITE IS LOCATED AT PULL OFF AREA ON SOUTH SIDE OF SR111.	3-POINT COMPOSITE. SURFACE.	120	164	<1	32	385	1240	0.1	10	<5	7.45	2480	17

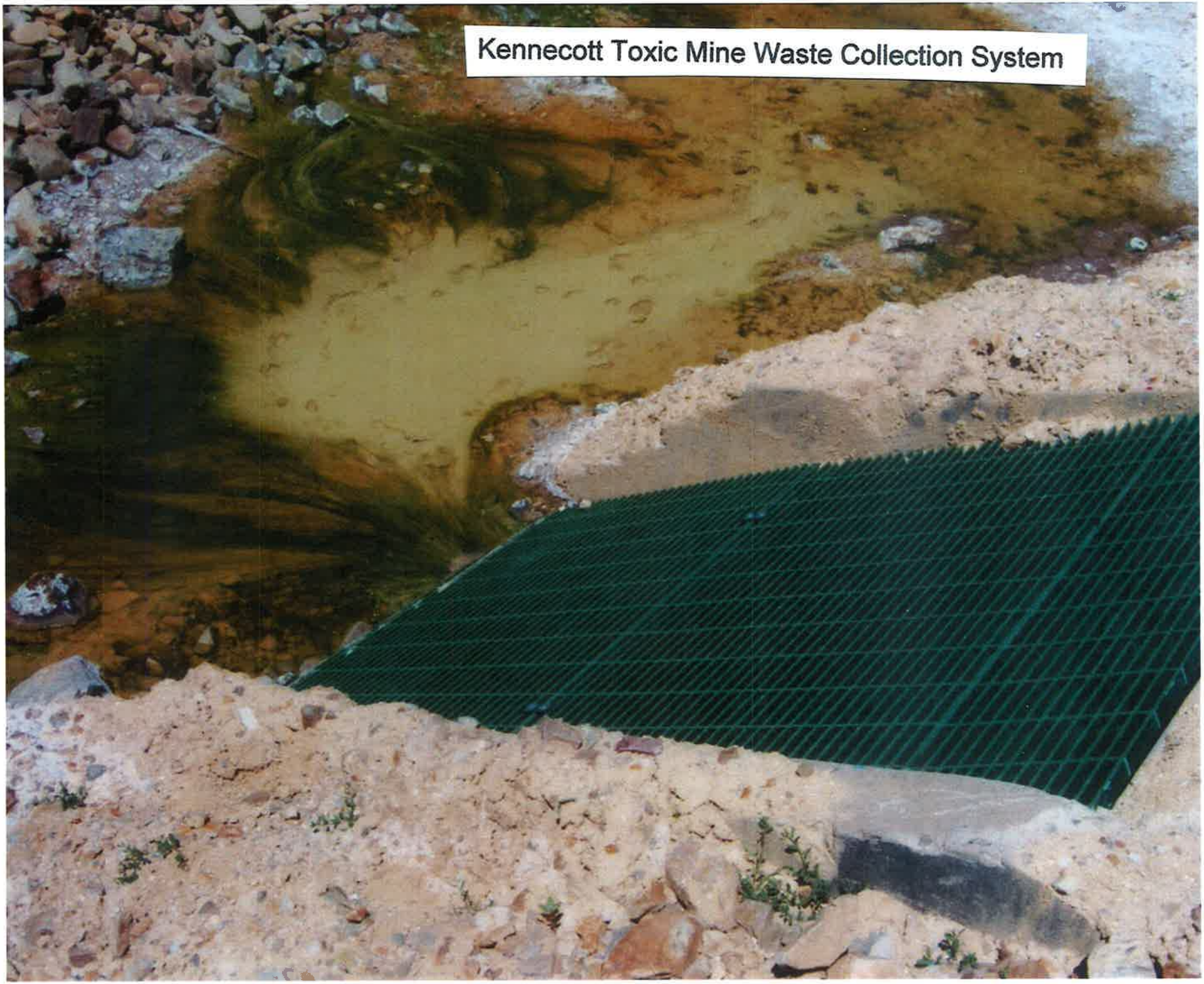
Samples collected from soil below where recent storm sediment was deposited.

Kennecott Mine Waste Contamination


Kennecott Mine Waste Dump – Butterfield Canyon

Kennecott Mine Waste Dump – Notice Gulch is full of mine waste




Kennecott Toxic Mine Waste Collection System

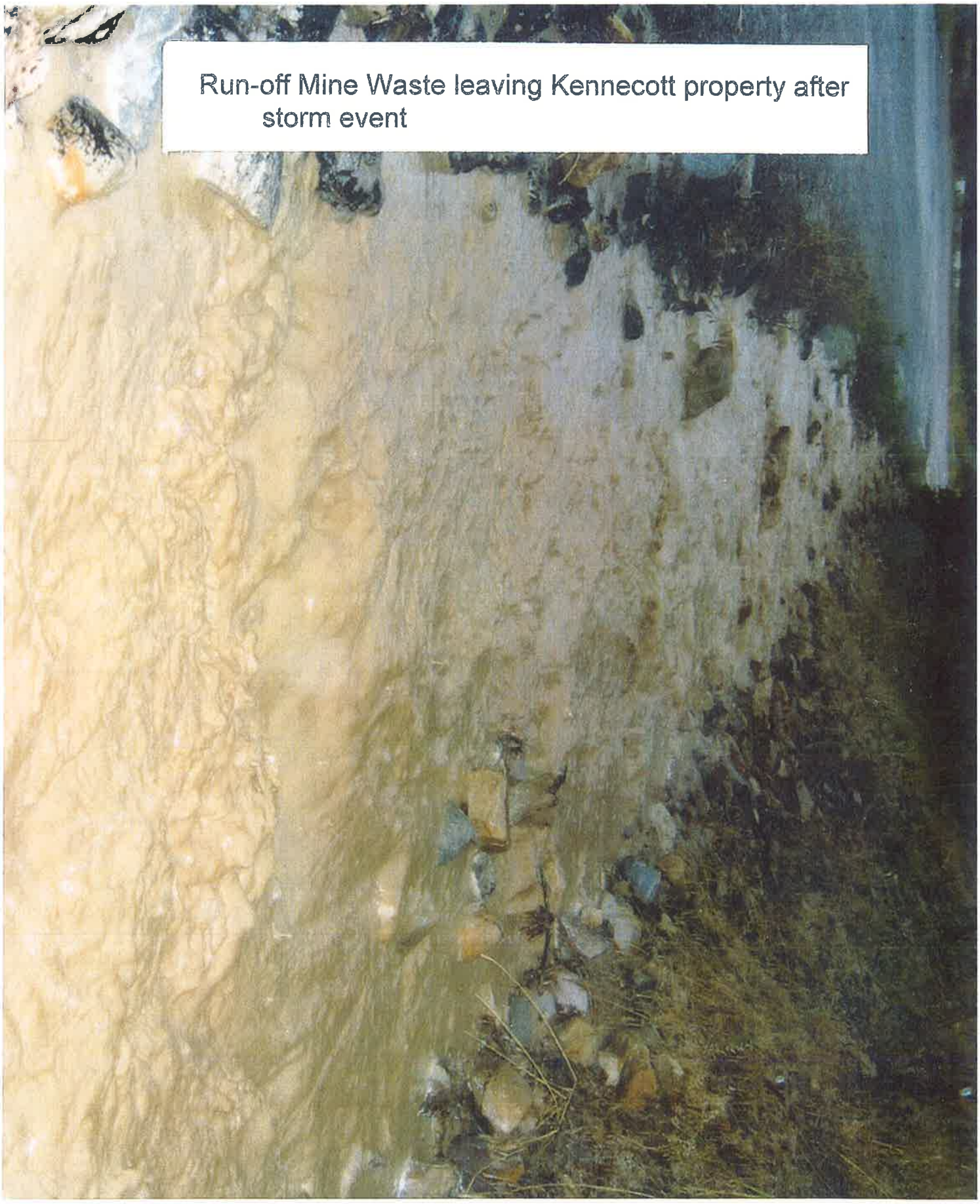

Mine Waste with lead and arsenic leaving
Kennecott property


Muddy toxic waste after storm event entering
Butterfield Creek drainage

Mud and Mine Waste leaving Kennecott entering Butterfield Creek

Toxic Mine Waste in Butterfield Creek entering
Dansie property

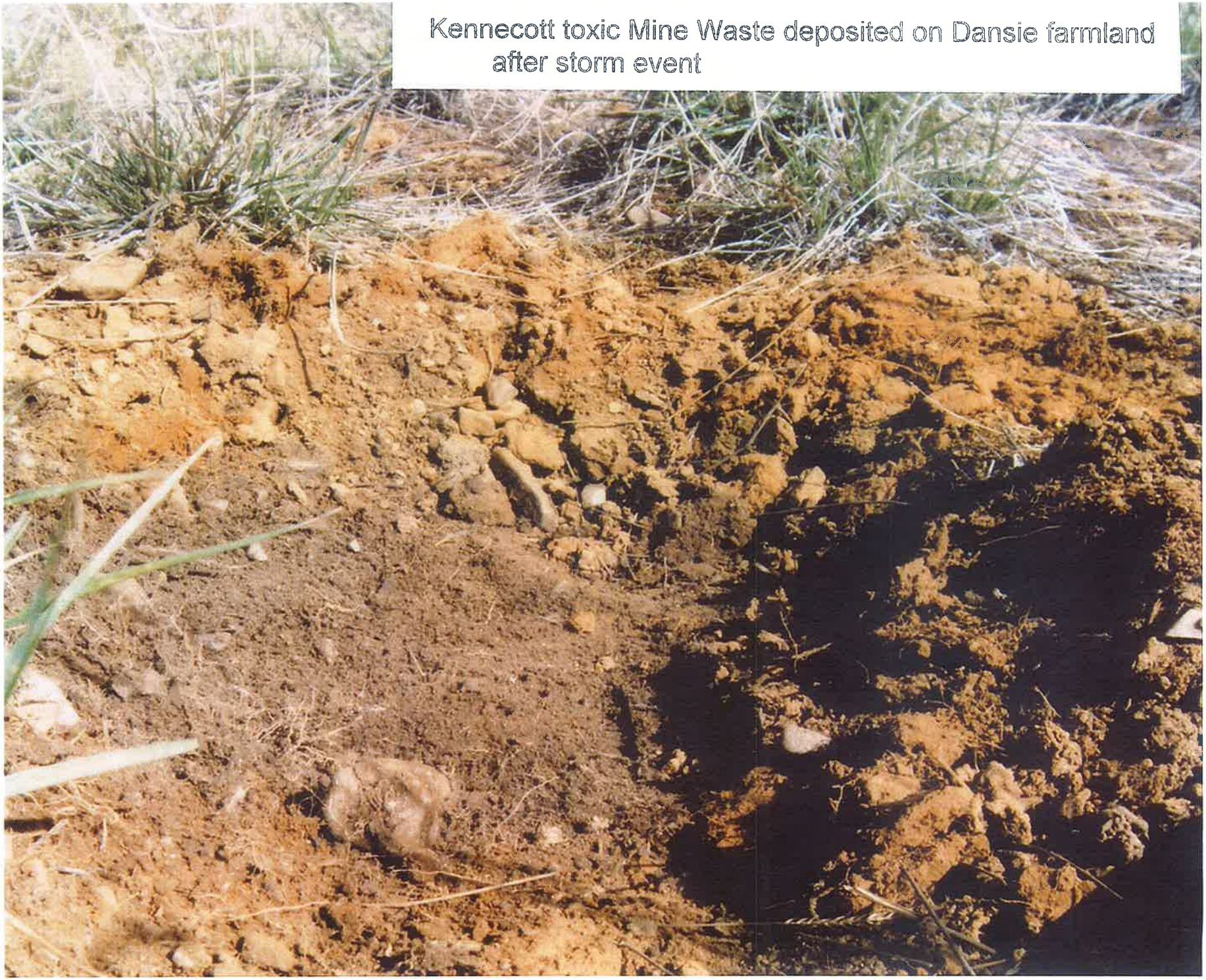

Along the road in Butterfield Canyon after storm event,
Run-off entering Butterfield Creek drainage



Run-off Mine Waste leaving Kennecott property after storm event

Toxic Mine Waste deposited on Dansie farmland after storm event

Kennecott toxic Mine Waste deposited on Dansie farmland after storm event



Letters written to:

* Kennecott Chief Operating Officer
* Division of Oil Gas and Mining
  Environmental Manager
* Division of Oil Gas and Mining Engineer
* Division of Oil Gas and Mining
  Associate Director of Mining
* Utah Department of Environment Quality
  Environmental Scientist at U.S.
  Environmental Protection Agency
  Region 8

Letters written to:
* Kennecott Chief Operating Officer

Boyd W. Dansie
7041 W. 13090 So.
Herriman, Utah 84096
801-254-0428
October 29, 2013

Stephane Leblanc
Chief Operating Officer
Kennecott Utah Copper

I am writing concerning the Kennecott mine waste containing lead and arsenic which comes down the Butterfield Canyon and is deposited around my home and the family farm.

During the past thirty years, storm waters from cloudbursts have washed out mine waste rock creating mudflows which have spilled into the creek, contaminating the ground around where I live. The continuing storm events that have happened the last fifteen years have covered many acres of our farm with mine waste and are well documented by the Division of Oil Gas and Mining.

Since the September 13, 2013 storm event, three meetings have been held with Kennecott's Environmental Manager. He has stated at the last meeting that Kennecott can not guarantee with each new large storm event that mine waste will not continue to overflow the sedimentation basins and cut-off walls entering Butterfield Creek and be deposited on the Dansie farm. The Dansie family cannot endure these frequent continual five-year storm events. Our family can no longer sustain the use of our farm as a catch basin for the eventual and future storm event pollution brought on by Kennecott's mine waste.

We need to solve the problem of downstream migration mine waste with unacceptable levels of lead and arsenic that we receive after each storm event. It is a health risk to all who live here. Kennecott needs to solve the cause of this problem. Land needs to be cleaned up after past pollution events, but unless the basic problem of downstream mine waste in solved, it will have to be re-cleaned again after another future event.

Since we have been unable to see any viable solutions made by Kennecott's Environmental Manager, we would like to meet with someone else who would have some possible long-term solutions to clean up and prevent further pollution from Kennecott's mine waste on our farm. We need someone who sees a positive vision and solution to this problem and can guarantee that it will not happen in the future. I know that problems can be solved if people come together, listen to each other and look for sustainable reasonable solutions for both parties. I know that you know the importance of sustainable mining practices. This is not sustainable, for either Kennecott or us. The current problem of mine waste containing lead and arsenic coming down on our farm property after every large storm event has got to stop. I'm sure that you must have someone who has some workable ideas, for this is not a new problem.

Would you please get back with me on this matter?

Thank you,

Boyd W. Dansie

Boyd W. Dansie

* Division of Oil Gas and Mining
Environmental Manager

Boyd W. Dansie
7041 West 13090 South
Herriman, Utah 84096
(801) 254-0428
August 23, 2012

Paul Baker
Division of Oil, Gas and Mining
Utah Department of Natural Resources
1594 West North Temple, Suite 1210
P.O. Box 145801
Salt Lake City, Utah 84114-5801

Dear Mr. Baker,

I am writing concerning the Kennecott Utah Copper "Cornerstone Mine Expansion Project". My concern is the Kennecott mine waste containing lead and arsenic which comes down the canyon through the water system and is deposited around my home and farm. In the past, storm waters from cloudbursts have washed out the waste rock creating mudflows which have spilled into the creek contaminating the ground around where I live.

At the Open House, sponsored by Kennecott, company representatives stated that the handprint of the mine waste dumps would not be enlarged. They stated that the mine expansion material would be stacked on the existing dumps. This would prevent the toxic waste from entering Butterfield Creek drainage area. In *Kennecott's Large Mining Operation 2011 Annual Report* (p.1), the question is asked, "Where is the waste located?" The answer states, "Waste rock was placed on top of existing waste rock disposal areas, around the perimeter of the open pit."

From my observations, it appears that the mine waste dump handprint is being enlarged. Waste rock has been hauled and dumped over existing dumps enlarging the boundaries and covering the vegetation. The rills in the waste dump have been filled with fine crushed mine waste material. This has taken place in the Castro Gulch area of Butterfield Canyon.

The expansion and the enlarged handprint of the mine waste dump in the Castro Gulch have set up conditions for a mine waste blowout in this area. The existing dump has been enlarged by covering the rills with fine crushed rock and powder. In the event of heavy storm water flow the fine mine waste covering the rills would be eroded, sending mud waste down the gulch, filling the sedimentation basins and cut-off walls, thus sending the mudflow down to enter the Butterfield Creek. The enlarged dump has destroyed the trees, scrub brush, and natural vegetation at the bottom of the old existing dump. Without this protective vegetation, storm water would again erode the mining waste. The uncontrolled storm waters would overfill the sedimentation basins with mine waste, topping the cut-off walls and would again enter the Butterfield Creek.

The Castro Gulch has a history of many mine waste blowouts depositing toxic mine waste mudflows into the Butterfield Creek. The largest waste blowout occurred in 1967. There have been many smaller mudflows between 1970 and1997. The present sedimentation basins, cut-off walls and collection systems have helped to prevent the mine waste mud from entering the Butterfield Creek, but the new mine expansion presents a new contamination problem for Kennecott and its down-stream neighbors.

The Cornerstone Mine Expansion and the enlargement of the waste dumps in the Butterfield Canyon will continue to present contamination problems for us as the down-stream neighbors to Kennecott. I am asking that before existing permits are updated and before new permits are issued that neighboring landowners be invited to meet with the Division of Oil, Gas and Mining to express our concerns. Our main concern is that Kennecott must find better ways for the containment of its hazardous waste material, especially during storm events, or we, as its down-stream neighbors, will have the same problems as in the past. Our land has not been cleaned up from past storm run-off events which have contaminated our land with both lead and arsenic.

A history of the mining in Butterfield Canyon goes back to 1876. There have been many mining operations that have been bought and sold. Some mining companies have gone out of business and new companies have purchased their land interests. Kennecott Copper, over years of operation, has purchased all the land north of the Butterfield Creek. They now use this land to store their mine waste. They also operate sedimentation basins, cut-off walls, and water collection systems there. The old mine tunnels in this area are used to help with dewatering of the Bingham pit.

The purchase of the historic mining interest by Kennecott has made it possible to expand their present Bingham Canyon mine. Many of these old mining companies did not have the knowledge or technology needed to mine the minerals without contaminating the water or land. Today, Kennecott has the knowledge, technology, and resources to mine the minerals without contamination of water or the land. Kennecott has purchased these historic land and mining interests to help them with their future expansions. They have no desire in cleaning up historic mining problems.

My purpose for mentioning the mining history of Butterfield Canyon is to stop the contamination on my land as a down-stream neighbor to Kennecott. Kennecott purchased old mining companies that had contamination problems. They need this land to expand their mining operations now. The Division of Oil, Gas and Mining are the ones who issue permits for future expansion. It seems the ethical thing to do would be to require Kennecott to set aside resources to clean up the historic mining contamination problems before expansion is allowed. Kennecott also needs to clean up the neighboring lands which they have polluted during their own operations.

Mining is important in Utah but should not be at the expense, health or safety of neighboring lands. Mining regulations can help the mining corporations and still be considerate of the safety of neighboring communities. Rio Tinto has shown philanthropy through contributions, grants, scholarship, etc. to the people

of the Salt Lake valley. Rio Tinto's resources have come from mining. If they can use their finances and resources to enlarge a positive reputation to the community as a "good neighbor to the state of Utah", why shouldn't they first use their knowledge, technology and those same resources to clean up land which they have polluted which belongs to their down-stream "real" neighbors? Kennecott professes to be a "good neighbor". They ask the public to "take a closer look". We, as the land owners of the adjacent and down-stream lands, ask you, the Department of Oil, Gas and Mining to take a "closer look" at Kennecott. With this information, past historic problems, current pollutions, and plans for expansion, do you feel Kennecott is a "good neighbor" worthy of new permits to expand their operations in the methods they are now planning?

Please take this information and our concerns into consideration as you deal with Kennecott and the decisions you must make when you issue permits. We realize Kennecott is a large corporation and we are down-stream property owners. We hope you will honor the rights of landowners as well as wealthy corporations as you make these decisions. We trust you will value the health, safety, and concerns of the people in the community that are affected by Kennecott's proposed expansion.

Sincerely,
Boyd W. Dansie

Boyd W. Dansie

* Division of Oil Gas and Mining Engineer

M1036/0002 26
cc: Leslie
TASK: 4940

RECEIVED
JUN 29 2012
DIV. OF OIL, GAS & MINING

Boyd W. Dansie
7041 West 13090 South
Herriman, Utah 84096
(801)254-0428
June 27, 2012

Ms. Leslie Heppler
Division of Oil, Gas and Mining
Utah Department of Natural Resources
1594 West North Temple, Suite 1210
P.O. Box 145801
Salt Lake City, Utah 84114-5801

Dear Leslie Heppler,

I have called and talked to you about the Kennecott Copper Mine waste dump expansion. I am very concerned and would like to put my thoughts in this letter to you.

Kennecott Utah Copper is a very important corporation in Utah. They provide many jobs and pay taxes to the state of Utah as well as pay out large dividends to their stock holders throughout the world. The price of gold and metals have made huge increases in the past few years, making the mining company very profitable.

Kennecott Copper is in the process of a large mine expansion "Cornerstone Project". I have visited with company representatives about this expansion. They have stated that the waste rock would be placed on top of existing waste rock disposal areas around the perimeter of the open pit. This same information was included in the Large Mining Operation 2011 Annual Report. The footprint of the mine waste dump is increasing in size. The mine waste is being dumped over the mountainside filling the rill of the existing dump with new mine waste. This action of filling the long narrow valleys with fresh mine waste is setting up conditions for thunderstorm flood events where mine waste sediment, washing downstream, could fill and overflow settling ponds, collection systems and cut-off walls placed down stream. This waste contains lead and arsenic. The waste could then flow down the Butterfield Creek onto the farms and around residential houses, including my home.

In the past, storm water events that would normally channel water down the old mine waste dump rill would be collected by the settling ponds and collection systems. Because Kennecott is changing their practices of mine waste disposal, new engineering studies should be initiated concerning this problem. I feel that if changes are not made in the collection systems, many of the downstream neighbors will again be flooded with toxic mine waste.

Mining is important in Utah but should not be at the expense and safety of their neighbors. Mining rules can help the mining corporations and still be considerate of the neighboring communities.

I am asking for new engineering studies to be initiated on the volume of waste materials that have filled the rill and could be released in a new storm flood event. Are the storm collection systems adequate to protect the downstream

neighbors? I am also asking that their new mining practices be investigated and studies completed before new permits are issued for expansion of their mine waste dumps.

I propose that a physical audit should be completed each year to gain a knowledge of new mining practices that are implemented and if existing permits are being followed.

If you have questions about these observations, please contact Boyd Dansie at 801-254-0428.

Sincerely,
Boyd W. Dansie

Boyd W Dansie

Incoming
cc: Dana
Susan M0350002
Beth
Tom

* Division of Oil Gas and Mining
Associate Director of Mining

Boyd W. Dansie
7041 West 13090 South
Herriman, Utah 84096
(801)254-0428
April 13, 2008

Department of Natural Resources
Division of Oil, Gas and Mining
1594 West North Temple, Suite 1210
Salt Lake City, Utah 84116

To Mary Ann Wright, Associate Director of Mining:

I am writing for some help to control the future mineral exploration and mining in the Butterfield Canyon drainage area.

Kennecott Utah Copper Corporation "Crown Jewel of Reno Tinto Mining", owns mineral rights in the Butterfield Canyon drainage area. They have asked Kennecott Exploration Company to conduct mineral exploration in the drainage area for future mining. In the past, Combined Metals Reduction Company purchased by Kennecott and others have mined the area underground and on the surface. This mining activity has created large mining dumps that have toxic waste material, including lead and arsenic left behind in the dumps. Through storms and normal winter activities, this waste material has entered the Butterfield Creek, left the canyon and has been deposited on the farm land and around homes in the drainage area.

These incidents have happened over the last fifty years. During the last ten years, the people using the Butterfield Creek water have become aware of the toxic nature of the mine waste dumps. During the last ten years, the mining company has cleaned up the canyon of waste dumps from underground mining and waste dump material that came from the surface mining waste dumps that moved down the canyon during the many storms, but they have not cleaned up mining waste from the lower drainage areas or the flat lands.

I own part interest in my grandfather's farm with other family members. During my lifetime, there have been numerous storm events that have brought large amounts of mine waste materials down the canyon in the Butterfield Creek. This material has settled out on the farm ground and around my house as the water went into the ground leaving yellow mine waste material that contains different level amounts of lead and arsenic with each storm

I am writing to ask your help in controlling the new mineral exploration and possible future mining activity in the Butterfield Canyon drainage area.

As I become aware of the health problems associated with mine waste material such as lead and arsenic, I have changed farming practices and tried to keep irrigation water away from my home during storm events. As I mentioned, this depositing of mine waste has continued even after the canyon was cleaned up, and mine waste material from Kennecott surface mining removed from roads and hauled away.

The most recent depositing of mine waste happened in 2007. The amounts of materials in the water have been less since the canyon was cleaned up and waste ditches were constructed to stop this activity, but mine waste materials still continue to come down Butterfield Creek to lower lands during storms.

Our family has talked with many Kennecott representatives about purchasing land in the Butterfield Canyon drainage area, making land trades, or cleaning up mine waste material from farm and yard areas. The Kennecott representatives have come and gone. New representatives have been assigned, small pond areas have been cleaned on the farm by Kennecott; but we have not been able to convince Kennecott to enlarge their buffer zone around the Butterfield Canyon drainage area to prevent potential health problems.

I am very concerned about the future mineral exploration to be conducted by Kennecott Exploration Company and the future mining activity in this area. Without a larger buffer zone, it could create a large health problem for our family.

Could you please advise me about what could be done to help prevent this from becoming a larger health problem in the future? Kennecott's new management has talked about becoming very transparent about their mining activities. It would be interesting to learn about the future mineral exploration and possible remediation efforts that might help prevent continual mine waste from coming down the Butterfield Creek and settling on our farm property and around my home. Kennecott Exploration Company has said that they will comply with all federal, state and local laws and ordinances. What laws and ordinances would protect our farm and yard area? As a state government agency over mining, you may have some ideas that may help with existing and future health issues.

Thank you for your help,
Boyd W. Dansie

Boyd W Dansie

Utah Department of Environment Quality
Environmental Scientist at U.S.
Environmental Protection Agency
Region 8

Boyd W. Dansie
7041 West 13090 South
Herriman, Utah 84096
801-254-0428
Oct. 9, 2013

Douglas Bacon
DEQ – DERR

Dear Mr. Bacon,

I am writing concerning the September 13th -14th storm event in Butterfield Canyon. I have to work with Kennecott Copper and the Division of Oil, Gas, and Mining to stop the mine waste containing lead and arsenic which comes down the canyon through the water system and is deposited around my home and farm. I have not had much success with the D.O.G.M. to take a closer look at mine waste dumps. Every seven to ten years, we have a contamination event.

My concern is to stop contamination on my land and the downstream neighbors in the town of Herriman. A large cleanup project was completed in the town of Herriman and a Record of Decision was signed by the Environmental Protection Agency in 2001.

The objectives of the R.O.D. were to protect the public health and welfare from actual or threatened releases of hazardous mine waste substances in the environment. The remedial action objectives were as follows:

Item 2. "prevent exposure of humans to unacceptable high levels of lead and arsenic in soil."

Item 3. "prevent downstream migration of unacceptable levels of lead and arsenic in water used for irrigation by home owners and farmers."

I am asking you to speak with Kennecott about not following the Record of Decision that was set up in September 28, 2001.

Would you please get back with me on this problem?

Thank you,
Boyd W. Dansie
Boyd W Dansie

Enclosed letters:
Answer to questions about Cornerstone Project
Control of future mineral exploration
Mine waste dump expansion
Concerning Cornerstone Expansion Project

Questions Asked about Kennecott's Cornerstone Expansion Project

Questions concerning Rio Tinto Mine Expansion – Cornerstone Project

1. How will widening and deepening the mine affect the ground water for neighbors adjacent to Kennecott in the Butterfield Canyon Herriman drainage area?

2. In the past, excess sulfuric acid produced at the smelter was trucked to the mine and dumped on the mine dumps above the old town of Lark. With the mine expansion, will there be an increase in sulfuric acid production, and what will become of this by-product?

3. In past years during large storms, waste dumps containing lead and arsenic have covered the Butterfield Canyon road. The materials that stayed in the canyon and on roadways were trucked back up the canyon and dumped next to the large mine dumps. With the mine expansion and more loose mine waste, what will prevent this waste from coming down the drainage areas again?

4. With the new mine expansion, will there be continued remediation to reclaim areas affected by historic mining efforts? Will there be any effort to reclaim land areas adjacent to the mine that have been impacted by mine waste?

5. Concerning the Cornerstone Mine expansion project, can the residents of Herriman be assured that the toxic waters that enter the Butterfield drainage area from the waste dumps, tunnels and the Lark mine (U.S. Smelting and Refining Tunnel) be kept from entering the Herriman drainage area?

6. With the removal of more waste rock to uncover future ore reserves, are there plans which would include a larger buffer zone that could be used to prevent significant spills of the toxic waste?

7. Should new water and land permits be issued before there has been complete cleanup of adjacent lands impacted by previous historical mining activity?

8. When issuing new mining permits, questions should be asked:

   What remediation will need to be made to the mining areas when the mine expansion activities are concluded?

   What current mining practices should be changed before there is future mine expansion?

   Should continued remediation take place to reclaim areas affected by historic mining activities?

With the mine expansion, will remediation and clean-up still be possible?
Should needed clean-up monies be put in escrow before mine expansion be allowed to take place?

What are the long term health hazards to the people living in adjacent lands which have been contaminated with lead and arsenic brought about from mining wastes?

9. How many tons of mine waste will need to be removed to uncover the new ore deposits?

10. Where will the mine waste that is removed be put?

11. What mining practices will be changed to prevent mine waste from coming down the Butterfield Creek drainage?

12. Are there plans to increase or enlarge the mining buffer zone around the Butterfield Canyon drainage area?

13. With the mine expansion, will there be any clean-up or remediation of private land contaminated by historic mining activity?

14. Will any mining practices be changed to prevent significant spills of mine waste during storm events?

15. What government agencies issue the water and land permits needed to move, store and crush more rock for the expansion?

16. In 1970, following storm events, one hundred feet of the Butterfield Canyon Road was covered ten feet deep with mine waste. What are the planned preventative measures so that this will not happen again with the new mining expansion?

Rio Tinto

Kennecott Utah Copper
4700 Daybreak Parkway
South Jordan, Utah 84095
801-569-7128 (o)
801-569-7192 (f)

Kelly L. Payne, P.G.
Manager - Environment

31 March 2011

Answers to Questions and Concerns about Kennecott's Cornerstone Expansion Project

Mr. Boyd Dansie
7041 W 13090 S
Herriman, UT 84096

Dear Mr. Dansie:

On behalf of Kennecott Utah Copper, I would like to thank you for your interest in the Cornerstone Project and attending several of our Open Houses. Cornerstone is our plan for extending the life of the Bingham Canyon Mine and its operations to 2028 and beyond. This plan calls for pushing back the south wall of the mine to access additional ore resources to keep the mine operating productively, safely, and efficiently.

I am writing today to respond to your questions, which are reproduced below in *italic* followed by our response.

1. *How will widening and deepening the mine affect the ground water for neighbors adjacent to Kennecott in the Butterfield Canyon Herriman drainage area?*

Kennecott has been monitoring groundwater systems in the region of the Bingham Canyon Mine for many years and will continue to do so for the life of the mine (including Cornerstone). Based on these data and on internal evaluations conducted by a diverse group of groundwater specialists, the Cornerstone project is not expected to impact surrounding groundwater systems. However, we are continuously working to increase our understanding in areas that may be sensitive to local communities and other stakeholders, including areas such as Butterfield Canyon and Herriman. To advance this understanding Kennecott has partnered with the Utah Division of Natural Resources (DNR) to monitor water quality, aquifer water levels, and surface water flow trends in the region of our operations. The DNR has contracted with the United States Geological Survey to participate in monitoring and publication of the data collected. Furthermore, Kennecott currently holds the water rights that will be necessary for the Cornerstone Project and does not believe that there will be a need to appropriate or acquire additional water rights. If there is a need to modify the point of diversion or nature of use of our water rights to support the Cornerstone Project we will file the appropriate change application(s), notice of which will be published for review and comment. The approval or rejection of such change application(s) is the responsibility of the State Engineer.

2. *In the past, excess sulfuric acid produced at the smelter was trucked to the mine and dumped on the mine dumps above the old town of Lark. With the mine expansion, will there be an increase in sulfuric acid production, and what will become of this by-product?*

Decreasing copper grade at the mine means that more material has to be mined to maintain the current production level of concentrate to feed the smelter. Thus, we will not necessarily see a corresponding increase in sulfuric acid production with the mine expansion. Sulfuric

acid is and will continue to be sold commercially and used in the copper refining process. We also use sulfuric acid occasionally to test copper recovery technologies at a lined and permitted facility in Bingham Canyon. Based on credible information that I have reviewed, Kennecott did apply sulfuric acid to the waste dumps during short and unsuccessful tests in the 1970s to improve copper leaching efficiency, but in current practices, Kennecott does not use acid to leach the waste rock piles.

3. *In past years during large storms, waste dumps containing lead and arsenic have covered the Butterfield Canyon road. The materials that stayed in the canyon and on roadways were trucked back up the canyon and dumped next to the large mine dumps. With the mine expansion and more loose mine waste, what will prevent this waste from coming down the drainage areas again?*

Kennecott is unconditionally committed to preventing off-site release of waste material. To prevent off-site release of stormwater and sediment from the waste rock piles we have constructed sediment ponds, diversion structures, and pipelines to capture water and sediment at the toe of the waste rock piles. In over 15 years of operation, these systems have demonstrated robustness and we continue to improve the effectiveness of these systems. We are confident that these systems are adequate to manage stormwater runoff from the current and future waste rock piles.

Unfortunately, there have been several occasions where intense rainstorms have overwhelmed the stormwater capture systems. In these instances, we have responded promptly and responsibly by notifying regulatory agencies, cleaning up sediment (except where private property owners have denied access), repairing control structures, evaluating root cause of the failure, and making improvements in response to our findings.

4. *With the new mine expansion, will there be continued remediation to reclaim areas affected by historic mining efforts? Will there be any effort to reclaim land areas adjacent to the mine that have been impacted by mine waste?*

Kennecott has an on-going program to reclaim land affected by mining and we report our progress annually to the Division of Oil, Gas, and Mining. In 2010, Kennecott re-graded, covered with soil, and planted 35 acres of waste rock in Bingham Canyon, bringing the total number of acres reclaimed to over 300 acres at the mine. Kennecott plans to continue reclamation of waste rock piles in Bingham Canyon and other areas. Additionally, our waste dumping practices today differ from those in the past in order to allow for reclamation of current and future waste piles. These practices include dumping in shorter lifts with setbacks between lifts to better allow us to re-grade the slopes of new waste piles, and segregation and stockpiling of waste rock that is suitable for growing vegetation for use in later reclamation. We also salvage soil from any new areas where waste rock is to be placed such as in Bingham Canyon.

5. *Concerning the Cornerstone Mine expansion project, can the residents of Herriman be assured that the toxic waters that enter the Butterfield drainage area from the waste dumps, tunnels and the Lark mine (U.S. Smelting and Refining Tunnel) be kept from entering the Herriman drainage area?*

There are no toxic waters that enter the Butterfield drainage area from the waste dumps, tunnels, or the Lark mine.

In the early to mid-1990s, Kennecott implemented a series of engineered controls to prevent further release of pollutants to groundwater from waste rock dumps and mine tunnels, and ceased active leaching operations in 2000. Kennecott is now required to maintain such groundwater protection systems, monitor performance, and meet protectiveness criteria as specified in permits issued by the Utah Division of Water Quality under the Groundwater Protection Program. Fifteen years of monitoring has demonstrated that these controls are effectively protecting groundwater.

Water from one mine tunnel—the Butterfield Tunnel—discharges by gravity to Butterfield Creek. This discharge is permitted through the Division of Water Quality's Utah Pollution Elimination Discharge System process, and Kennecott's permit requires that the water meet certain water quality criteria, which it does consistently.

6. *With the removal of more waste rock to uncover future ore reserves, are there plans which would include a larger buffer zone that could be used to prevent significant spills of the toxic waste?*

As I noted in the response to Question 3, Kennecott is unconditionally committed to preventing any spill or unpermitted release of waste material. Kennecott's obligation and preference is to control sediments on site rather than to expand buffer lands.

7. *Should new water and land permits be issued before there has been complete cleanup of adjacent lands impacted by previous historical mining activity?*

We have completed cleanup of cleanup of historical mining wastes for which we are a responsible party, including waste on adjacent lands. Regulatory agencies will consider our permit applications based on technical completeness and compliance of the proposed activities with established regulations. Kennecott has demonstrated that it is a responsible mine operator that is committed to environmental stewardship and social wellbeing. We have a solid history of compliance with the conditions of our environmental permits.

8. *When issuing new mining permits, questions should be asked:*

a. *What remediation will need to be made to the mining areas when the mine expansion activities are concluded?*

Kennecott has a Mining and Reclamation plan on file with the Utah Division of Oil, Gas and Mining that describes the work that we will conduct during and after mining to reclaim mining areas. We will be updating this plan as part of the Cornerstone permitting process. As our plan indicates, we have committed to regrading recent and future waste rock dumping areas, placing cover material, to the extent it is available, and seeding areas where there are suitable soil conditions. Kennecott is required to leave the mine waste dumps and the pit area in a safe and stable condition at closure and continue to manage water collected at the toe of the dumps following closure.

b. *What current mining practices should be changed before there is future mine expansion?*

Current regulation allows Kennecott to conduct the type of surface mining practiced at Bingham Canyon and we have demonstrated that we are able to undertake these mining practices in a manner that meets all environmental requirements.

c. *Should continued remediation take place to reclaim areas affected by historic mining activities?*

As noted in my response to Questions 4 and 8a, Kennecott has an on-going reclamation program and has a plan to complete certain reclamation at the end of mine life.

d. *With the mine expansion, will remediation and clean-up still be possible?*

The mine expansion will not affect Kennecott's ability to complete groundwater cleanup and land reclamation work.

e. *Should needed clean-up monies be put in escrow before mine expansion be allowed to take place?*

Kennecott has posted $15 million dollars in financial assurance with the Environmental Protection Agency to guarantee completion of groundwater clean-up. Kennecott also has financial assurance in the form of a corporate guarantee with the Division of Oil, Gas and Mining for the reclamation work required to close the Bingham Canyon Mine.

f. *What are the long term health hazards to the people living in adjacent lands which have been contaminated with lead and arsenic brought about from mining wastes?*

As you are aware, the Environmental Protection Agency investigated human health risks in the Herriman area in the 1990s, and addressed these risks in residential areas through removal of contaminated soil. EPA determined that lead and arsenic on agricultural lands do not pose a significant risk to human health; however, if land is converted to residential use, EPA has said that additional clean-up would be necessary. EPA's determinations are documented in a September 28, 2001 Record of Decision that can be found at EPA's web site.

9. *How many tons of mine waste will need to be removed to uncover the new ore deposits?*

Approximately 1.7 billion tons of waste rock will be moved as part of Cornerstone.

10. *Where will the mine waste that is removed be put?*

While we have not finalized waste placement plans, we anticipate that much of the rock will be placed on immediately adjacent to existing waste rock piles. What this means is that waste rock piles would get taller. We anticipate that most of the new waste rock will be placed on the north end of the mine although some waste rock will be placed on the south waste rock piles.

11. *What mining practices will be changed to prevent mine waste from coming down the Butterfield Creek drainage?*

See response to Question 3.

Rio Tinto

12. Are there plans to increase or enlarge the mining buffer zone around the Butterfield Canyon drainage area?

We do not believe that it is necessary to enlarge the buffer zone around the Bingham Canyon Mine for current or planned future mining.

13. With the mine expansion, will there be any clean-up or remediation of private land contaminated by historic mining activity?

Kennecott has an established record of addressing historic mining wastes that may present a threat to human health and the environment. We participated with EPA in the Herriman removal action and conducting the clean-up in Butterfield Creek Canyon. Kennecott is certain that it has fulfilled its legal and social obligations regarding the clean-up of contaminated properties in the Herriman area and is not planning additional work.

The record for the Herriman area supports Kennecott's conclusion that over 99% of the lead contamination found in the Herriman area was generated and disposed of by historic mining operations to which Kennecott has no relationship. Decades after the lead ores were milled in Butterfield Canyon and disposed in Butterfield Creek, Kennecott predecessors purchased property in Butterfield Canyon where some of the historic milling and waste rock operations occurred. Kennecott did not conduct the lead mining or milling activities in the Butterfield Canyon and its operations never produced sources of lead which, in and of themselves, would have caused a soil clean up action in the Herriman area.

The agricultural properties in the Herriman area were not cleaned up during the EPA response in the late 1990s. Instead, EPA determined that lead and arsenic contamination on the agricultural lands did not pose a significant risk to human health and the environment, but indicated that lands must be cleaned up before any residential development is permitted. Kennecott agreed with EPA to provide space in our on-site engineered repository for Herriman agricultural soil at no charge through October 2007. KUC has offered on several occasions to extend the expiration of this offer for any clean-up of the Dansie agricultural parcels.

14. Will any mining practices be changed to prevent significant spills of mine waste during storm events?

See response to Question 3.

15. What government agencies issue the water and land permits needed to move, store and crush more rock for the expansion?

As Kennecott advances Cornerstone studies, we will review and where necessary update approximately 25 of our 70 major environmental permits. This work will continue over the next 2 to 4 years. The permits relevant to your question are administered by the Utah Department of Environmental Quality Division of Water Quality (programs include the Utah Pollutants Discharge Elimination System and Utah Groundwater Protection Program) and the Utah Department of Natural Resources Division of Oil Gas and Mining (Utah Mined Land Reclamation Act),

Rio Tinto

16. *In 1970, following storm events, one hundred feet of the Butterfield Canyon Road was covered ten feet deep with mine waste. What are the planned preventative measures so that this will not happen again with the new mining expansion? .*

See response to Question 3. Additionally, the operational activities that led to waste rock releases in that era are no longer conducted.

Regards,

Kelly L. Payne, P.G.
Manager - Environment

cc: Rod Dansie
Richard Dansie
Doug Bacon, UDEQ-DERR
Rebecca Thomas, USEPA
Leslie Helper, UDNR-DOGM
Mike George, UDEQ-DWQ
Dan Hall, UDEQ-DWQ
Kim Shelley, UDEQ-DWQ

M0350002
Incoming

From: "Payne, Kelly (KUCC)" <paynek@kennecott.com>
To: "Douglas Bacon" <DBACON@utah.gov>, <thomas.rebecca@epa.gov>, <lheppler@u...
Date: 4/1/2011 10:56 AM
Subject: Response to Boyd Dansie Questions
Attachments: 20110331 Boyd Dansie Letter.pdf

All-

Attached is a courtesy copy of Kennecott's response to written questions from Mr. Boyd Dansie, Herriman, regarding Kennecott operations and mine life extension activities. It is my understanding that you also received a copy of these questions.

If you have questions or comments about Kennecott's response, please do not hesitate to contact me or Zeb Kenyon.

Regards,

Kelly Payne, PG

Manager - Environment

Kennecott Utah Copper

Rio Tinto

8362 West 10200 South, Bingham Canyon, Utah 84006

P.O. Box 6001, Magna, Utah 84044-6001

T: (801) 569-7128 M: (801) 842-3729 F: (801) 569-7192

kelly.payne@riotinto.com <mailto:kelly.payne@riotinto.com>
www.riotinto.com <http://www.riotinto.com/> www.kennecott.com
<http://www.kennecott.com/>

Questions Asked about Kennecott's Cornerstone Expansion Project

Kennecott community open house meetings have attracted criticism.

By Boyd Dansie

After attending the Kennecott Utah Copper Cornerstone meetings, very little new information was given. Kennecott is planning for the future with a large mine expansion. The expansion will widen the south end of the mine by 1000 feet and lower the depth of the mine by 300 feet to uncover more high-grade copper ore.

The question was asked, "What do you plan to do with all of the overburden waste that will be removed to expose the ore for mining?" The answer was to stack it higher on the existing dumps. "What consideration has been given to prevent this toxic waste from entering the Butterfield Creek drainage area?" The answer was, "We are still in the planning stage." Question, "How will the water quality be affected by deepening the mine by 300 feet?" The answer was, "We are still in the planning phase."

Residents in the Butterfield Canyon drainage area are concerned about past and future contamination of mine waste dumps with the future mine expansion. The overburden waste dump contains toxic lead and arsenic. The Agency for Toxic Substances & Disease Registry, a department under the U.S. Department of Health and Human Services has identified the Butterfield Creek drainage area of the Kennecott South Zone "a past and current public health hazard until the on-going removal and remediation is completed" (1). The agency further states that residents may have been exposed to high levels of lead and arsenic from contaminated soils and that may have resulted in an increase in an individual's lifetime risk of cancer and is associated with small decreases in IQ and slightly impaired hearing and growth (2).

We hope that in future open house meetings on mine expansion, Kennecott can explain how its mining practices will eliminate health problems associated with past mining activities and prevent future health problems in the neighboring community.

1) Agency for Toxic Substances and Disease Registry. Public health assessment, Kennecott South Zone. http://www.atsdr.cdc.gov/HAC/pha/PHA.asp?docid=801&pg=0 Retrieved 01/20.

2) Agency for Toxic Substances and Disease Registry. Public health assessment, Kennecott South Zone. http://www.atsdr.cdc.gov/hac/pha/pha.asp?docid=801&pg=3 Retrieved 01/20.

Boyd Dansie is a resident in the Butterfield Canyon drainage area, neighbor to Kennecott Utah Copper.

FORM MR-AR
(Revised 11/2008)

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING
1594 West North Temple - Suite 1210
Box 145801
Salt Lake City, Utah 84114-5801
Telephone: (801) 538-5291
Fax: (801) 359-3940

LARGE MINING OPERATIONS 2011 PROGRESS REPORT
January 1, 2011 to December 31, 2011

The information required in this form are based on provisions of the Mined Land Reclamation Act, Title 40-8, and the rules as under the Utah Minerals Regulatory Program.

1. Mine Permit Number: **M/035/0002**
2. Mine Name: **Bingham Canyon Mine**
3. Name of Operator/Permittee: **Kennecott Utah Copper LLC (KUC)**

   Note: If Operator's address, company representative or phone numbers have changed, please provide a replacement page for the Notice of Intention.

4. Mine Location:

   Sections 7,8,9,10,11,17,18,19,20,21,30 & 32, Township 1S, Range 2W
   Sections 9,11,12,13,14,15,16,22,23,24,25,26 & 36, Township 1S, Range 3W
   Sections 4,5,9,10,11,14,15,22,23,27 & 33, Township 2S, Range 2W
   Sections 7,17,18 & 19, Township 3S, Range 1W
   Sections 4,8,9,13,14,15,16,17,19,20,21,24,25,28,29,30,31 & 32 Township 3S, Range 2W
   Sections 11,12,13,14,15,21,22,23,24,25,26,27,33,34,35 & 36, Township 3S, Range 3W
   Sections 6 & 7, Township 4S, Range 3W
   Sections 1, 2, 3, 11 & 12, Township 4S, Range 3W

5. Report the gross amount of ore mined and waste moved, and the disposition of the materials (onsite stockpiles, sold, waste pile, regraded, etc.):

Gross Ore Mined	**68,572,914**	Tons**
Waste Material Moved	**122,624,318**	Tons**
New Disturbance	**80**	Acres
Area Reclaimed	**25**	Acres
Total Disturbed Area	**9595**	Acres*

*Total mine disturbance from the beginning of mining operations through the end of 2011
**Short tons

Was the ore shipped off site? If not, where is the ore located?

- *No ore was shipped off site*
- *Total ore mined equaled 68,572,914 tons comprised of:*
  - *60,491,850 tons of higher grade ore that was mined, crushed and conveyed to the Copperton Concentrator*
  - *8,081,064 tons of low grade ore that was stockpiled*

Where is the waste located?

- *Waste rock was placed on top of existing waste rock disposal areas, around the perimeter of the open pit*

6. Briefly describe the reclamation work performed during the past year. A map showing reclaimed areas and dates is suggested. (Submit form MR-SITE for an application for full or partial bond/site release).

Bingham Canyon Mine (Drawing 454-T-0481 & 20120124_Soil Salvage)

1 *Bingham Canyon waste rock disposal area- between 6190 and 6390*
- A. *On 35 acres planted 2800 Gamble Oak & Curl Leaf Mountain Mahogany seedlings (25% had tree protectors installed)*
- B. *On 35 acres planted 250 sagebrush & 200 Rabbitbrush*
- C. *Final reclamation completed on 25 acres which includes slope re-grade (2.5:1 slope), application of growth media and seed*
- D. *Salvaged ~46,000 yd^3 growth media from north side of Bingham Canyon ≥6290 elevation and staged on the 6390 bench for future reclamation*

2 *Reclamation Monitoring (Drawing 454-T-0481)*
- A. *Monitoring for seedling success in Bingham Canyon*
- B. *Evaluation of seed mix success and neighboring native vegetation*
- C. *Monitoring of seed fertilization test plots*
- D. *Physical evaluation of seed mix for impurities*

Bingham Canyon Waste Rock Disposal Area (Drawing 454-T-0481)

3 *Store & Release Cover Field Trials*
- A. *Completed one site visit and instrumentation installation and calibration of store and release cover field trial test plots*
- B. *Completed report on first year (2010) trial findings*

Bingham Canyon Mine Native Areas (Drawing 454-T-0481)

4 *Evaluation of Cover System Design Alternatives*
- A. *Completed soil-atmosphere numerical modeling of native soils*
- B. *Installed moisture infiltration monitoring devices into native soils*
- C. *Completed both site specific and literature review of native plant rooting system performance for KUC*

Bingham Canyon Mine South Pushback (20120124_Soil Salvage)

5 *Soil Salvage Related to South Pushback Mine Expansion*
- A. *Salvaged and stockpiled approx. 330,000 yd^3 of growth media for future reclamation*

Bingham Canyon Mine South End Dump Drainages

6 *Hydrologic Re-evaluation of key drainages containing least capacity*
- A. *Four drainages (Yosemite, S. Saints Rest, Castro and Olsen) were re-evaluated for storm water capacity based upon initial capacity estimates (2009 URS Hydro Assessment) and drainage capacity improvements.*

South Tailings Area: T-1 Pump Station

7 *Demolished pump station*
- A. *Re-contouring and seeding are deferred to 2012*

7. **Include an updated map depicting surface disturbance and reclamation performed during the year**, prepared in accordance with Rule R647-4-105.

- *The following attachments are provided to detail 2011 reclamation activities:*
  - *2011 UDOGM Annual Reclamation Reporting Register*
  - *Drawing 454-T-0481: 2011 Reclamation Activities on the Bingham Canyon Mine Waste Disposal Areas*
  - *Drawing 20120124_Soil Salvage: 2011 Soil Salvage Locations Map (Bingham Canyon & South Pushback)*

I hereby certify, under penalties of law, the information provided in this report is true and correct to the best of my knowledge and belief.

Name (Typed or Print): Kelly Payne

Title of Operator: Manager – Environment

Signature of Operator: Kelly Payne

Date: **January 31, 2012**

pb
H:\DOGM\Annual Reporting\2010\BCM M-035-002\File02-2010M-035-002BinghamCanyonMineUDNR-DOGMFormMR.doc

Chapter 9.50 INSTITUTIONAL CONTROLS

Close

Sections: Please copy the preselected perma-link text.

9.50.010 Purpose and intent.
http://library.municode.com/HTML/16602/level2/TIT9HESA_CH9.50INCO.htm#TOPTITL
9.50.020 Definitio
9.50.030 Application.
9.50.040 Contamination areas map.
9.50.050 Allowed uses.
9.50.060 Review of permit applications.
9.50.070 Administration.
9.50.080 Effective date.
9.50.090 Fees.

Institutional Controls

Mine waste sediment containing toxic lead and arsenic on approximate 40 acres of Dansie farm. Concentrations are above residential remediation goals (1200 ppm lead, 100 ppm arsenic) set by the U.S. Environmental Protection Agency for Herriman (Record of Decision, September 28, 2001)

9.50.010 Purpose and intent.

Response actions have been taken or overseen on various properties in the county by EPA and DEQ under the authority of CERCLA, HSMA or the VCP. The response actions implemented at CERCLA, HSMA or VCP sites may include institutional controls necessary to limit human exposure to contaminants left on site. These documented response actions may contain institutional controls describing specific levels for the contaminants left on site and measures such as conditional building permits, subdivision regulations, excavation permits, restrictions on soil disturbance and land use restrictions necessary to protect the integrity of the response action. Specific levels may vary depending on the site and use of the property.

The purpose of these requirements is to promote public health, safety, and the general welfare of county residents consistent with the goals of reducing the risk of exposure to contaminants and returning contaminated properties to a productive use consistent with the current and future land uses, surrounding neighborhoods and the environment, while minimizing exposure risks by:

A. Limiting or prohibiting the exposure of people and the environment to surface and subsurface contaminants;
B. Preventing or limiting activities in areas of surface or subsurface contamination; and
C. Protecting a response action that has been taken at the site.

(Ord. No. 1750, § I, 6-18-2013)

9.50.020 Definitions.

A. "Applicant" means a person who has applied for a grading, excavation, building or other permit involving soil disturbance or excavation.
B. "CERCLA" means the Comprehensive Environmental Response Compensation and Liability Act, 42 U.S.C. 9601.
C. " Contaminants" or "contamination" shall include, but not be limited to, any element, substance, compound or mixture, including disease causing agents, which after release into the environment and upon exposure, ingestion, inhalation, or assimilation into any organism, either directly from the environment or indirectly by ingestion through food chains, will or may reasonably be anticipated to cause death, disease, behavioral abnormalities, cancer, genetic mutation, physiological malfunctions (including malfunctions in reproduction) or physical deformations, in such organisms or their offspring; except that the term contaminant shall not include petroleum, including crude oil or any fraction thereof which is not otherwise specifically listed or designated as a hazardous substance and shall not include natural gas, liquefied natural gas, or synthetic gas or pipeline quality.
D. "Council" means the Salt Lake County Council.
E. "Decision document" means a CERCLA, HSMA, or VCP determination that leaves contamination on the site at levels that allow for some but not all uses or that include an engineered feature, structure, or otherwise requires monitoring, maintenance or operation, e.g. EPA Record of Decision, EPA Action Memo, EPA Administrative Order on consent, EPA Unilateral Administrative Orders, EPA Consent Decrees, EPA Operation and Maintenance Plans, EPA Removal Action Report, DEQ Voluntary Cleanup Agreements, DEQ Site Management Plans, DEQ Certificates of Completion, or any other document that establishes levels.
F. "DEQ" means the Utah Department of Environmental Quality.
G. "Development" means any man-made change to improved or unimproved real property, including but not limited to buildings or other structures, excavating, filling, grading, or paving.
H. "EPA" means the United States Environmental Protection Agency.
I. "Health Department" means the Salt Lake County Health Department.
J. "HSMA" means the Hazardous Substances Mitigation Act contained in §§ 19-6-301, et seq., Utah Code Ann.
K. "Institutional control" means non-engineered measures, including restrictive covenants, land use requirements and restrictions contained in this chapter to limit the movement of or exposure to contaminants left on site and documented in a response action implemented at a specific CERCLA, HSMA or VCP site by EPA and/or DEQ.
L. "Level" means the level of contamination that may remain on site consistent with the applicable decision document.
M. "Person" means an individual, corporation, LLC or other legal entity.
N. "Planning and development services division" means the Salt Lake County Public Works Department, Planning and Development Services Division and equivalent divisions at each city within Salt Lake County.
O. "Response action" means response action as defined in CERCLA, a response action as defined in the VCP and a cleanup action, investigation or remedial action as defined in HSMA.
P. "Soil disturbance" means the excavation of soils for construction, landscaping, or other reasons.
Q. "VCP" means the Voluntary Cleanup Program established by Title 19, Chapter 8 of the Utah Code.

(Ord. No. 1750, § I, 6-18-2013)

9.50.030 Application.

This chapter applies to all real property in the incorporated and unincorporated areas of Salt Lake County located within a contamination area designated on the contamination areas map on file with the planning and development services division. These areas will be reviewed periodically as decision documents are developed, updated and/or as land use changes. Any municipal ordinance implementing site specific institutional controls shall supersede this chapter.

(Ord. No. 1750, § I, 6-18-2013)

9.50.040 Contamination areas map.

A. The planning and development services division shall incorporate GIS data files received from EPA, DEQ and local regulatory agencies identifying areas known to contain contaminants identified in decision documents.

B. The contamination areas map shall also include properties within the boundaries of any incorporated area subject to institutional controls established in a municipal ordinance.

C. The adoption of and any amendments, additions or deletions to the contamination areas map shall be made by the council.

(Ord. No. 1750, § I, 6-18-2013)

9.50.050 Allowed uses.

Each use established before the effective date of this chapter and uses incidental and accessory to such use may be continued in the same manner thereafter, provided that such use is neither in violation of any other ordinance or health regulation nor determined by a court of competent jurisdiction to be a nuisance under the provisions of federal, state and local laws or health regulations. All new land uses, changes of use, or expansions of use shall comply with this chapter

(Ord. No. 1750, § I, 6-18-2013)

9.50.060 Review of permit applications.

If a permit for development or soil disturbance is requested with respect to a property that is located in a contamination area and designated on the contamination areas map, the planning and development services division, following a preliminary review, shall request additional review by the health department. The health department shall review the application for compliance with applicable decision document requirements and will consult with other federal, state or local regulatory agencies if additional technical assistance is required. The health department will respond to planning and development services division and indicate that the application may be approved, disapproved or placed on hold pending additional action in accordance with the applicable decision documents.

On submittal of a permit application for development or soil disturbance to planning and development services, the following procedures and actions may take place:

A. Review of the application by planning and development services.

B. Issuance of requested permit or further review by the health department.

C. Health department review and:

1. Approval given for permit issuance; or
2. Referral to DEQ for further review.

D. DEQ review and:

1. Approval given for permit issuance relayed to the health department and planning and development services; or
2. Additional requirements outlined by DEQ to be met after permit is issued.

E. Planning and development services permit issued to applicant.

F. Inspection of completed additional DEQ requirements by DEQ and the health department; and

1. Letter of completion; or
2. Additional work required for letter of completion.

G. Final inspection and letter of completion.

Work for which an approved permit is obtained must begin within one year of approval. If work does not begin within this time frame, the applicant must reapply with the planning and development services division.

(Ord. No. 1750, § I, 6-18-2013)

9.50.070 Administration.

The policies and procedures for the administration of the process established under this chapter shall be administered by the planning and development services division and the health department as provided for in this chapter.

(Ord. No. 1750, § I, 6-18-2013)

9.50.080 Effective date.

This chapter shall become effective fifteen days after its passage and upon at least one publication of the ordinance from which this chapter derives or a summary thereof in a newspaper published and having general circulation in Salt Lake County.

(Ord. No. 1750, § I, 6-18-2013)

9.50.090 Fees.

Health department fees associated with this chapter will be approved by the board of health and recorded in the health department's fee schedule, and are separate from any other fees that may be assessed by other county, state, or city agencies.

(Ord. No. 1750, § I, 6-18-2013)

Release and Settlement Agreement proposed by Kennecott Utah Copper Corporation is not adequate to start the clean up process.

1. Clean up plan needs to be established

2. Clean up plan needs to free Dansies from institutional controls established by Salt Lake County with help from Department of Environmental Quality, Environmental Protection Agency under the authority of CERCLA, HSMA or VCP

3. The clean up plan needs to bring the toxic concentration of lead and arsenic down to levels before Kennecott storm events.

4. The release agreement should not prevent Dansies from communication with the Department of Oil Gas and Mining, Department of Environmental Quality, Division of Drinking Water and Salt Lake County Planning about levels of contamination of the site due to the Storm events.

5. The purpose of removing storm event contamination is to prevent human exposure to lead and arsenic, not damages to the Dansies.

6. Kennecott can disagree that the owners have been damaged by the mine waste on their property, but they need to present a presentable plan to the Dansies and DEQ and Division of Oil Gas and Mining to prevent human exposure to lead and arsenic from their mine waste that has come down the canyon from numerous storm events.

Release and Settlement Agreement proposed by Kennecott Utah Copper Corporation is not adequate to start the clean up process.

RELEASE AND SETTLEMENT AGREEMENT

THIS RELEASE AND SETTLEMENT AGREEMENT ("Agreement") is made and entered into as of the ____ day of October 2013 by and between The Jesse H. and Ruth B. Dansie Trust, a trust established under the laws of the State of Utah; J. Rodney Dansie, an individual, for himself and as Trustee for the foregoing Trust; Richard Dansie, an individual; and Boyd Dansie, an individual (collectively, "Owners") and Kennecott Utah Copper LLC, a Utah limited liability company, formerly known as Kennecott Utah Copper Corporation, a Delaware corporation ("Kennecott"), collectively referred to herein as the "Parties" and individually as a "Party."

RECITALS

A. Owners own land designated as Parcel No. 26-33-326-002, No. 26-33-426-001 and No. 26-34-300-005 located in Salt Lake County in Sections 33 and 34, Township 3 South, Range 2 West (the "Property"), certain portions of which, as described below and identified in Exhibit "A", contain yellow-brown colored mine waste rock materials that Owners claim moved from land owned by Kennecott onto the Property during storm events that occurred in 1997, 2007, and 2013 ("1997, 2007, and 2013 Storm Events").

B. On May 13, 2003, a representative of Kennecott met with a representative of Owners to conduct field observations of the location of the yellow-brown colored mine waste rock materials on the Property. As a result, the areas depicted on Exhibit "A" were identified by Owners as the areas where such mine waste rock materials were deposited during the 1997 Storm Event. The outlined lands shown in Exhibit "A" consist of a portion of land covering approximately 4.8 acres ("1997 Sediment Area 1") and a portion of land covering approximately 1.1 acres ("1997 Sediment Area 2"). Kennecott has not conducted additional field observations to confirm the presence or absence of mine waste rock materials in the 1997 Sediment Area 1 or 1997 Sediment Area 2 since 2003.

C. On July 31, 2007, representatives of Kennecott met with a representative of Owners to conduct field observations of the location of the yellow-brown colored mine waste rock materials that were deposited on the Property during the 2007 Storm Event. The outlined lands shown in Exhibit "A" also include a portion of land covering approximately 1.7 acres ("2007 Sediment Area"). On April 14, 2008, representatives of Kennecott met with a representative of Owners to conduct field observations of the portions of ditches where yellow-brown colored mine waste rock materials that were deposited on the Property along approximately 2,760 linear feet of ditch, as depicted on Exhibit "A" (the "Ditch Area"). Kennecott has not conducted additional field observations to confirm the presence or absence of mine rock materials in the 2007 Area or the Ditch Area since 2007.

D. In September, 2013, Owners allowed representatives from Kennecott to conduct field observations of the location of the yellow-brown colored mine waste rock materials that were deposited on the Property during the 2013 Storm Event. The outlined lands shown in Exhibit

"A" also include a portion of land covering approximately 33 acres ("2013 Sediment Area"). Some of the 2013 Sediment area overlaps some of the 2007 Sediment Area.

E. The yellow-brown mine waste rock materials purportedly located in the 1997 Sediment Area 1, 1997 Sediment Area 2, 2007 Sediment Area, Ditch Area, and in the 2013 Sediment Area are collectively referred to herein as the "Mine Waste Rock Materials".

F. The Mine Waste Rock Materials related to the 1997 and 2007 Storm Events have lead concentrations below the lower end of the risk-based, residential preliminary remediation goals ("PRG") of 1,200 to 1,600 mg lead/kg soil as determined and below the residential PRG of 100 for arsenic by the U.S. Environmental Protection Agency in the site-specific Herriman Endangerment Assessment and set forth in the Record of Decision ("ROD"), dated September 28, 2001. Mine Waste Rock Materials from the 1997 and 2007 Storm Events were present on the surface of the Property but were subsequently tilled in during farming.

G. The Mine Waste Rock Materials related to the 2013 Storm Event have lead concentrations below the risk-based agricultural PRG of 10,000 mg lead/kg soil as determined and below the PRG of 300 for arsenic, except one sample on the table land north of Butterfield Creek drainage area and its concentration was 307 mg/kg. Some locations are above the residential PRGs for lead and arsenic. Mine Waste Rock Materials from the 2013 Storm Events is currently present on the surface of the Property.

D. Owners claim that the Property has been damaged, and the Owners have suffered loss of use and enjoyment of the Property, by the deposit of Mine Waste Rock Materials and that Kennecott is responsible for such damage and loss. Kennecott disagrees with Owners claims and assertions and denies any liability for the 1997, 2007, and 2013 Storm Events.

E. Although the Parties cannot agree on whether damage has occurred or liability exists, the Parties desire to settle all claims with respect to the Mine Waste Rock Materials and the 1997, 2007, and 2013 Storm Events pursuant the terms set forth below. This Agreement is a compromise of the claims and liabilities alleged by the Parties to this Agreement and shall not be treated as an admission of liability by any of the parties for any purpose.

F. Separate from the foregoing, data indicate that soil on Owners' Property in areas other than those related to the 1997, 2007, and 2013 Storm Events contains lead and arsenic in concentrations higher than those in the Mine Waste Rock Materials due to possible deposition from historic mining and processing operations in Butterfield Canyon, and other mining activity (the "Other Contamination"). The Parties disagree on (among other things) the nature, extent and cause of the alleged Other Contamination and the persons or entities responsible for such contamination. This Agreement does not address the alleged Other Contamination

NOW, THEREFORE, in consideration of the mutual covenants and conditions contained herein, and the other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties agree as follows:

TERMS

1. Consideration. In exchange for the Owners' release set forth in Section 2 below, and based on the representations of Owners set forth in Section 3 below, Kennecott shall remove the Mine Waste Rock Materials from the Property on a visually guided basis in general conformity with the Dansie Property Mine Waste Rock Materials Removal Plan ("Removal Plan"), attached as Exhibit B (the "Work"). Kennecott will complete the Work by July 31, 2014. Kennecott shall by July 31, 2014, pay to Owners the sum of xxx ($xxx) for the loss of use of the Property during the Work. Owners agree not to disturb the Mine Waste Rock Materials from the 2013 Storm Event.

2. Release. In exchange for the consideration set forth in Section 1 above, Owners, for themselves and their successors and assigns, fully and completely release and discharge Kennecott and all of its affiliated entities, insurers, successors and assigns, including their directors, officers, shareholders, employees, representatives and agents, from any and all claims, demands and liabilities of every kind and nature, whether known or unknown, that are related to or are in any way connected with the 1997, 2007, and 2013 Storm Events or the movement, presence, or remediation of the Mine Waste Rock Materials on the Property ("Claims"). Owners shall also refrain from further contacting or causing others to contact any governmental agency with regard to the areas addressed by this Agreement, except to state that Kennecott has addressed Owners' concerns to Owners' satisfaction.

3. Indemnity. Kennecott hereby assumes all risks associated with access to the Site to perform the Work. Kennecott hereby WAIVES ANY AND ALL CLAIMS AGAINST OWNERS BASED ON DEATH, BODILY INJURY OR PROPERTY DAMAGE INCURRED BY KENNECOTT ARISING FROM ACCESS TO AND USE OF THE PROPERTY UNDER THE TERMS OF THIS AGREEMENT, EXCEPT FOR CLAIMS ARISING FROM THE GROSS NEGILGENCE, RECKLESS, OR WILLFUL MISCONDUCT OF OWNERS. Kennecott agrees to indemnify and hold Owners harmless from and against any and all injuries, death, damages, claims, losses, demands, penalties, expenses or liabilities caused by the negligent actions or omission of Kennecott and/or its employees, agents or representatives, during the performance of the Work; except to the extent related to or arising out of the negligence or willful misconduct of Owners, if any or to the extent related to Claims covered by Paragraph 2 above. Owners agree to indemnify and hold Kennecott harmless from and against any and all injuries, death, damages, claims, losses, demands, penalties, expenses or liabilities caused by the negligent actions or omissions of Owners and/or its employees, agents or representatives, arising out of or relating to Owners' use of the Property during the execution of the Work; except to the extent related to or arising out of the negligence or willful misconduct of Kennecott, if any.

4. Property Access. Owners grant Kennecott permission to access the Property to perform the Work, which may be performed between 8:00 am and 6:00 pm, seven days a week, including holidays, at Kennecott's discretion.

5. Representations.

5.1. Owners represent that they have not assigned to any other party any Claim as described in Section 2.

5.2. Owners represent that they are the sole owners of the Property.

5.3. Owners represent that they are fully authorized to enter into this Agreement and grant Kennecott access to remove the Mine Waste Rock Materials from the Property.

6. Successors and Assignees. This Agreement binds and inures to the benefit of the Parties and their respective heirs, executors, administrators, agents, representatives, successors and assigns, inclusive of any insurance company assignees (collectively, "Assignees"). In the event that any claim or action is instituted by an Assignee of one Party against the other Party, the Party whose Assignee is bringing such action shall indemnify, defend and hold harmless the other Party from any and all losses, costs, claims, or expenses (including attorneys' fees) arising out of such claims or action.

7. Other Terms and Conditions.

7.1. Owner has read this Agreement, understands its terms and conditions, and has executed this Agreement after obtaining or having the opportunity to consult with legal counsel regarding this Agreement and that accordingly the terms of this Agreement are not to be construed against any party because that party drafted this Agreement or construed in favor of any party because that party failed to understand the legal effect of the provisions of this Agreement.

7.2. Owner acknowledges and agrees that no representations, warranties or guarantees have been made to them by Kennecott regarding any tax implications, effect or liabilities related to this transaction. Owner has relied on their own investigation, knowledge and tax advisors with respect to all tax aspects of this Agreement. Owner shall hold Kennecott and the Kennecott Parties harmless from and against any and all tax claims, payments or liabilities asserted against Kennecott or any of the Kennecott Parties arising hereunder.

7.3. Each Party is responsible for their own attorneys' fees, expenses and costs (if any) incurred in connection with this Agreement. In the event any party to this Agreement files an action to enforce or interpret its terms, the prevailing party in such action shall be entitled to recover its reasonable attorneys' fees, including expert witness fees and costs.

7.4. This Agreement has been entered into in the State of Utah and shall be governed by Utah Law. Any action to interpret or enforce this Agreement shall be brought and maintained exclusively in either the Third Judicial District Court for the State of Utah or the United States District Court for Utah. In addition, the parties hereto expressly consent to the exercise of exclusive personal jurisdiction of these courts with respect to any action to interpret or enforce this Agreement.

7.5. If any provision of this Agreement is held to be invalid, illegal, or unenforceable by any court of competent jurisdiction for any reason, the invalid or unenforceable portion shall be deemed severed from this Agreement and the balance of this Agreement shall remain in full force and effect and be enforceable in accordance with the non-severed provisions of this Agreement.

7.6. The Parties agree that the headings used in this Agreement are used for convenience and orientation only and are not intended to and do not any meaning or provide definitions for the terms and conditions of the agreement.

7.7. The Recitals A through F set forth above are hereby made a part of this Agreement and are incorporated by this reference.

8. Acceptance. This Agreement is only valid and enforceable if it is signed by each Party and notarized before October 31, 2013.

9. Entire Agreement. This Agreement constitutes the entire Agreement between the Parties with respect to the Mine Waste Rock Materials and the 1997, 2007, and 2013 Storm Events and may only be modified by a subsequent writing duly executed by the Parties.

IN WITNESS WHEREOF, the Parties have executed this Agreement as of the date first written above.

KENNECOTT UTAH COPPER LLC

By_____

Its_____

THE JESSE H. AND RUTH B. DANSIE TRUST

By: _____
J. Rodney Dansie, Trustee

_____
J. RODNEY DANSIE, an individual

_____
BOYD W. DANSIE, an individual

_____
RICHARD P. DANSIE, an individual

STATE OF UTAH

ss.

COUNTY OF _____

The foregoing instrument was acknowledged before me this ____ day of _____, 2013 by _____ as _____ on behalf of Kennecott Utah Copper LLC, a Utah limited liability company.

[SEAL]

_____
Notary Public

STATE OF UTAH

ss.

COUNTY OF _____

The foregoing instrument was acknowledged before me this ____ day of _____, 2013 by J. Rodney Dansie for himself and as Trustee of The Jesse H. and Ruth B. Dansie Trust, a trust established under the laws of the State of Utah.

[SEAL]

_____
Notary Public

STATE OF UTAH

ss.

COUNTY OF _____

The foregoing instrument was acknowledged before me this ____ day of _____, 2013 by Boyd W. Dansie.

[SEAL]

_____
Notary Public

STATE OF UTAH

ss.

COUNTY OF _____

The foregoing instrument was acknowledged before me this ____ day of _____, 2013 by Richard P. Dansie.

[SEAL]

_____
Notary Public

Documentation of 2007 Storm Event by Division of Oil Gas & Mining

JON M. HUNTSMAN, JR.
Governor
GARY R. HERBERT
Lieutenant Governor

State of Utah
DEPARTMENT OF NATURAL RESOURCES
Division of Oil, Gas & Mining

MICHAEL R. STYLER
Executive Director
JOHN R. BAZA
Division Director

Supervisor DWP

Inspection Report
Minerals Regulatory Program
Report Date: August 16, 2007

Mine Name: Bingham Canyon
Operator Name: Kennecott Utah Copper

Permit number: M/035/002
Inspection Date: 08/10/2007
Time: 10-11:30 AM

Inspector(s): Tom Munson, Beth Ericksen, Daron Haddock
Other Participants: Rod Dansie
Mine Status: Active

Weather:

Elements of Inspection	Evaluated	Comment	Enforcement
1. Permits, Revisions, Transfer, Bonds	☒	☐	☐
2. Public Safety (shafts, adits, trash, signs, highwalls)	☐	☐	☐
3. Protection of Drainages / Erosion Control	☒	☒	☐
4. Deleterious Material	☒	☒	☐
5. Roads (maintenance, surfacing, dust control, safety)	☐	☐	☐
6. Concurrent Reclamation	☐	☐	☐
7. Backfilling/Grading (trenches, pits, roads, highwalls, shafts, drill holes)	☐	☐	☐
8. Water Impoundments	☐	☐	☐
9. Soils	☐	☐	☐
10. Revegetation	☐	☐	☐
11. Air Quality	☐	☐	☐
12. Other	☐	☐	☐

Purpose of Inspection:
To determine the impacts to Mr. Rod Dansie's farm from Butterfield Canyon during a storm event which occurred on July 26, 2007 and July 27, 2007

Directions to Site:
We met at Mr. Dansie's house at 9:30 AM and traveled to his farm to see the site where water from Butterfield creek was deposited on his farm.

Inspection Summary:
Mr. Dansie showed us his field and pointed out were he felt the sediment had deposited. We then traveled to the location of the main irrigation pipe and examined the current water flow both in the pipebox and upstream in an open ditch. There was no evidence of sediment laden water at the time of inspection. There was no evidence of past deposition in the ditch or pipe. It appears what sediment laden water did make it's way to Mr. Dansie's field was more clay sized particles carried in suspension. Mr. Dansie told us that soil samples were taken by Kennecott on Mr. Dansie's field and showed evidence of the dump material being deposited on Mr. Dansie's land .

Conclusions and Recommendations:
This was a follow-up inspection to observe off site impacts, specifically related to Mr. Dansie's compliant. The inspection was informational in nature to collect the facts necessary to assess offsite impacts.

Inspector's Signature _____ **Date:** 8/16/2007

TM:pb
cc: Vickey Peacey
Attachment: Photos
P:\GROUPS\MINERALS\WP\M035-SaltLake\M0350002-BinghamPit\inspections\08102007-insp.doc

55

ROAD DITCH

EXIT AREA YOSEMITE DRAINAGE

56

ROAD
CULVERT TAKING DRAINAGE INTO BUTTERFIELD CR

SUPPOSED MINE DUMP MATERIAL BUTTERFIELD CREEK

DEPOSITION OF MINE WASTE BELOW CULVERT

57

PITCH LEADING TO BUTTERFIELD CREEK

BUTTERFIELD CANYON DUMPS

58

SOME EVIDENCE OF MINOR DEPOSITION

OPEN DITCH - BUTTERFIELD CREEK

YOSEMITE DRAINAGE

BUTTERFIELD ENTERING CREEK

COULERT

MR. DANSIE 's FARM

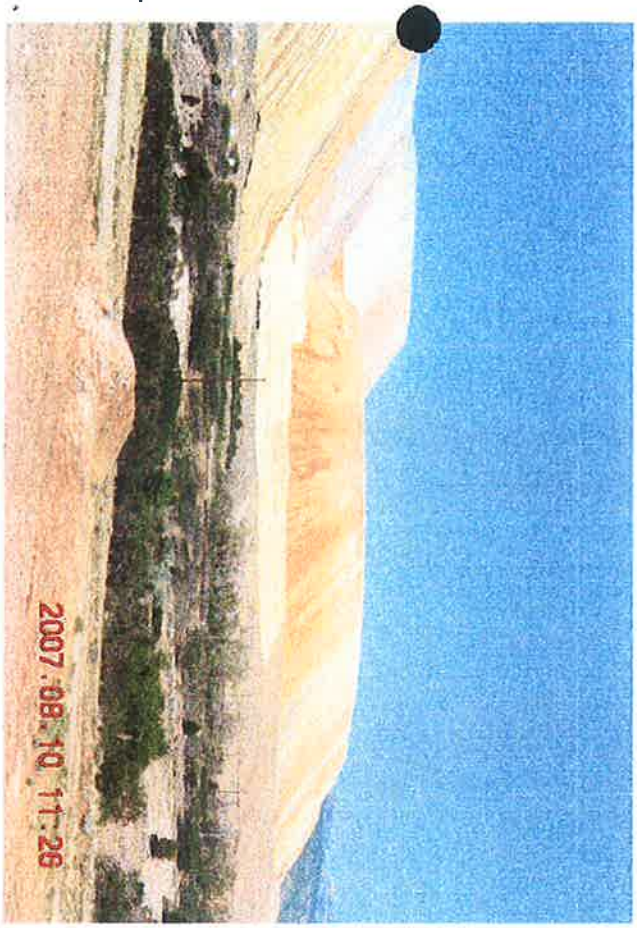
PROPOSED SEDIMENT CONTROL WATER

2007 08 10 09:36

2007 08 10 09:36

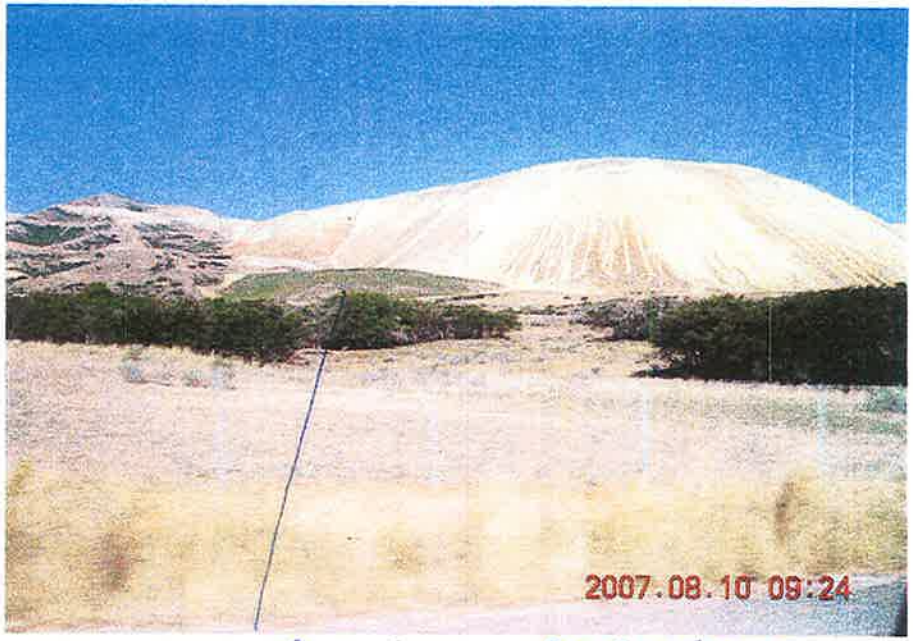
2007 08 10 09:36

2007 08 10 09:36


2007.08.10 11:26

64

BURMA ROAD



COPPER NOTCH REPOSITORY

Documentation of 2007 Storm Event by Division of Oil Gas & Mining

JON M. HUNTSMAN, JR.
Governor
GARY R. HERBERT
Lieutenant Governor

State of Utah
DEPARTMENT OF NA
Division of Oil, Gas & Mining

MICHAEL R. STYLER
Executive Director
JOHN R. BAZA
Division Director

Notice of Violation

Notice of Violation ☒ No. N2007-58-01

CERTIFIED RETURN RECEIPT # 7005 2570 0000 4801 9912

To the following Permittee or Operator:

Permittee/Operator Name: Kennecott Utah Copper/ attn: Mr. Rohan McGowan-Jackson, Manager, Health, Safety & Environment and Sustainable Development

Mine Name: Bingham Canyon ☒ Surface ☐ Underground ☐ Other

County: Salt Lake State: Utah Telephone Number: 801-569-6000

Business Address: P.O. Box 6001 Magna Utah 84044

Permit Number: M/035/002

Ownership Category: ☐ State ☐ BLM ☐ USFS ☒ Fee ☐ Other

Date of Inspection: July 31,2007 Time: 11:00 ☒ a.m. ☐ p.m. to 1:30 ☐ a.m. ☒ p.m.

Under authority of the Utah Mined Land Reclamation Act, Section 40-8-1 et seq., ***Utah Code Annotated,*** 1953, the undersigned authorized representative of the Division of Oil, Gas, and Mining has conducted an inspection of above mine on above date and has found that a Notice of Violation or Cessation Order must be issued with respect to the conditions, practices, or violations listed. In accordance with Section 40-8-9, ***Utah Code Annotated,*** you are ordered to cease immediately the operations or activity described and to perform the required actions described within the designated time for abatement.

The undersigned representative finds that **this order**
☐ **does require cessation of all mining;**
☒ **does not require cessation of all mining.**

For this purpose, "mining" means development of, or extraction of a mineral deposit, including transportation within or from the mine site, concentrating, milling, evaporation, or other processing. Mining and/or reclamation operations not directly the subject of this order shall continue while this order is in effect. You are responsible for doing all work in a safe and workmanlike manner.

This order shall remain in effect until it is modified, terminated or vacated by written notice of an authorized representative of the director of the Division of Oil, Gas, and Mining.

Date of service/mailing: 8/8/07 Time of service/mailing 2:00 ☐ a.m. ☒ p.m.

Permittee or Operator Representative

Title

Signature

Beth Ericksen
Division of Oil, Gas and Mining Representative

Mining Engineer
Title

Signature

1594 West North Temple, Suite 1210, PO Box 145801, Salt Lake City, UT 84114-5801
telephone (801) 538-5340 • facsimile (801) 359-3940 • TTY (801) 538-7458 • *www.ogm.utah.gov*

0007

SEE REVERSE SIDE

Notice of Violation NO. N2007-58-01

Violation No. 1 of 1

Nature of condition, practice, or violation:

On Friday, July 27 2007, 2.44 inches of rainfall resulted in the flow of Yosemite dump face material approximately 5000 ft off site into Butterfield Creek, a perennial stream. Current control measures were inadequate to manage and intercept the water/sediment flows from the Yosemite dump.

Provisions of act, regulations, or permit violated:

R647-4-107.1, R647-4-107.2, R647-4-107.3, R647-4-107.4, R647-4-107.5, R647-4-107.6

(Check box if appropriate:)

Condition, practice, or violation is creating an imminent danger to health or safety of the public.

__ Permittee/Operator is/has been conducting mining activities without a permit.

_x_ Condition, practice, or violation is causing or can reasonably be expected to cause significant, imminent environmental harm to land, air, or water resources.

__ Permittee or Operator has failed to abate Violation(s) No._____ included in Notice of Violation No. or Cessation Order No. M_____ within time for abatement originally fixed or subsequently extended.

Mining activity to be ceased immediately:

Affirmative obligation(s) or required action and abatement time (if applicable):

1. Identify appropriate and additional measure(s) to avoid or minimize future damage to natural channels. **2.** Provide detailed erosion control designs for all erosion control structures to show sediment is being controlled, contained, and treated in the Butterfield Canyon area. Optimize these designs. **3.** Demonstrate how deleterious materials (sediment) will be kept in an isolated condition to minimize or prevent any physical or chemical conditions in the soils and/or water so that environmental effects are adequately controlled. Establish and submit an implementable sediment-sampling plan before relocating sediment materials that meets Division approval. **3a.** Any sediment/debris that flowed outside of the permit area shall be cleaned-up and removed to a Division-approved location. **3b.** Identify where the removed sediment has been deposited and commit to remove the material to a Division-approved site if it is determined (through sampling) to adversely affect plant growth and/or water quality. **4.** Commit to establishing stability analysis plans for the waste dump area(s) that contribute to Butterfield Canyon watershed. Determine an appropriate slope stabilization method for all waste dumps contributing to Butterfield canyon area (which may include reducing the angle of repose of the dump slope). Numbered items 1-4 above must be incorporated into the mining and reclamation plan and approved by the Division.

Time frame for affirmative obligations numbered 1,2,3,4 is as follows: Within 45- days of the receipt date of this NOV all actions will include initial submittals to the Division which includes a schedule for each required action that specifically outlines a time frame and identified milestones that must be approved by the Division before implementation. Time frame for 3a and 3b is within 15 days.

pb
cc: Beth Ericksen, DOGM
Tom Munson, DOGM
Daron Haddock, DOGM
Doug Bacon, DEQ
Dan Hall, DWQ
Jan Robinson, DWQ (UPDES)
Rod Dansie, Citizen
O:\M035-SaltLake\M0350002-BinghamPit\Non Compliance\NOV-CO-KUCC.doc

Pictures of:

* Kennecott Mine Waste Dumps
* Dump Expansion
* Sedimentation Basins
* Cut-off Walls

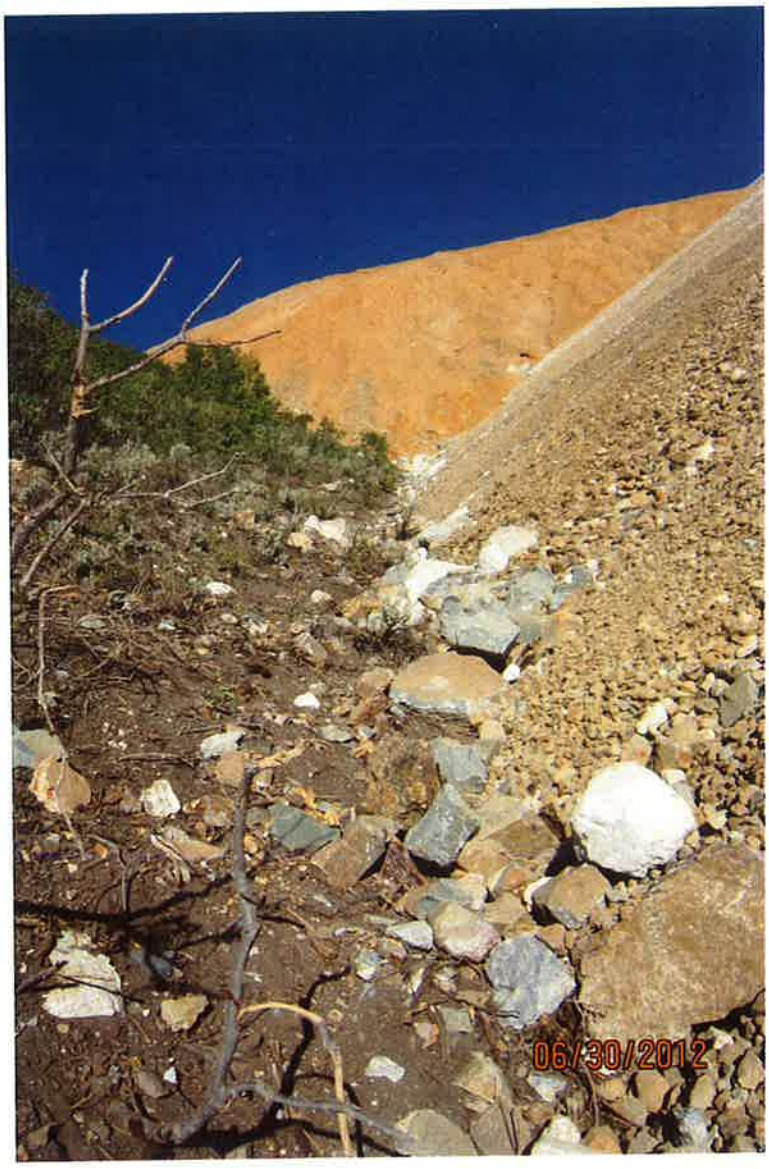
Filling rills, Upper Castro Mine Waste Dump Expansion

Before dump rills have been filled with fine crushed rock and powder.

Vegetation removed for dump expansion
Note: Fine dust coming off mine waste expansion


06/30/2012


06/30/2012


06/30/2012

Vegetation tree and scrub brush destruction due to mine waste expansion, Castro Gulch

Vegetation tree and scrub brush destruction due to mine waste expansion, Castro Gulch

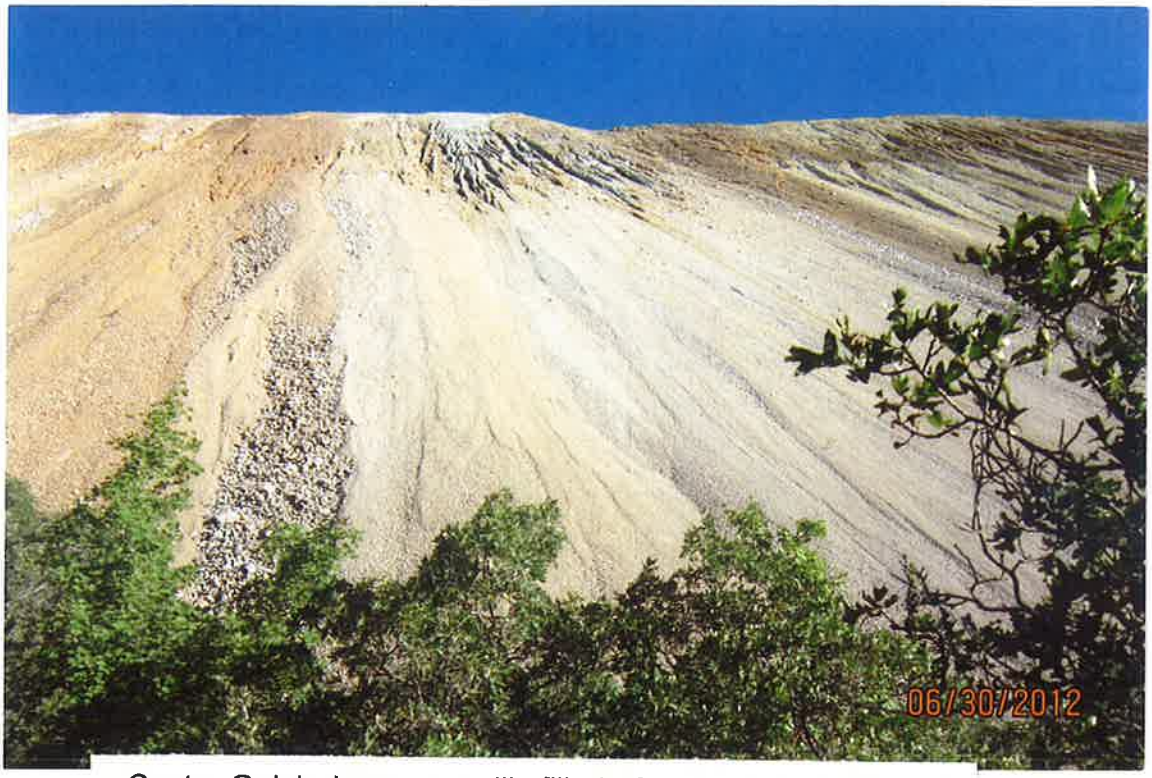
Vegetation tree and scrub brush destruction due to mine waste expansion, Castro Gulch

Vegetation tree and scrub brush destruction due to mine waste expansion, Castro Gulch

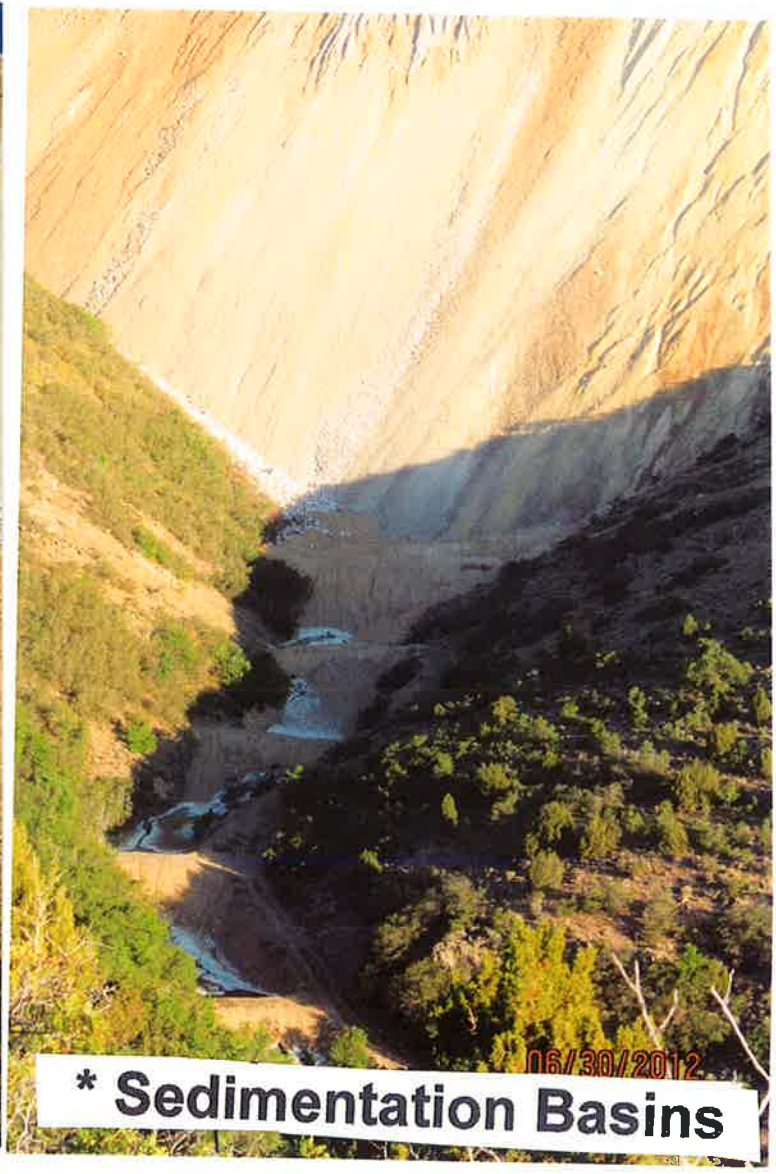
Vegetation tree and scrub brush destruction due to mine waste expansion, Castro Gulch

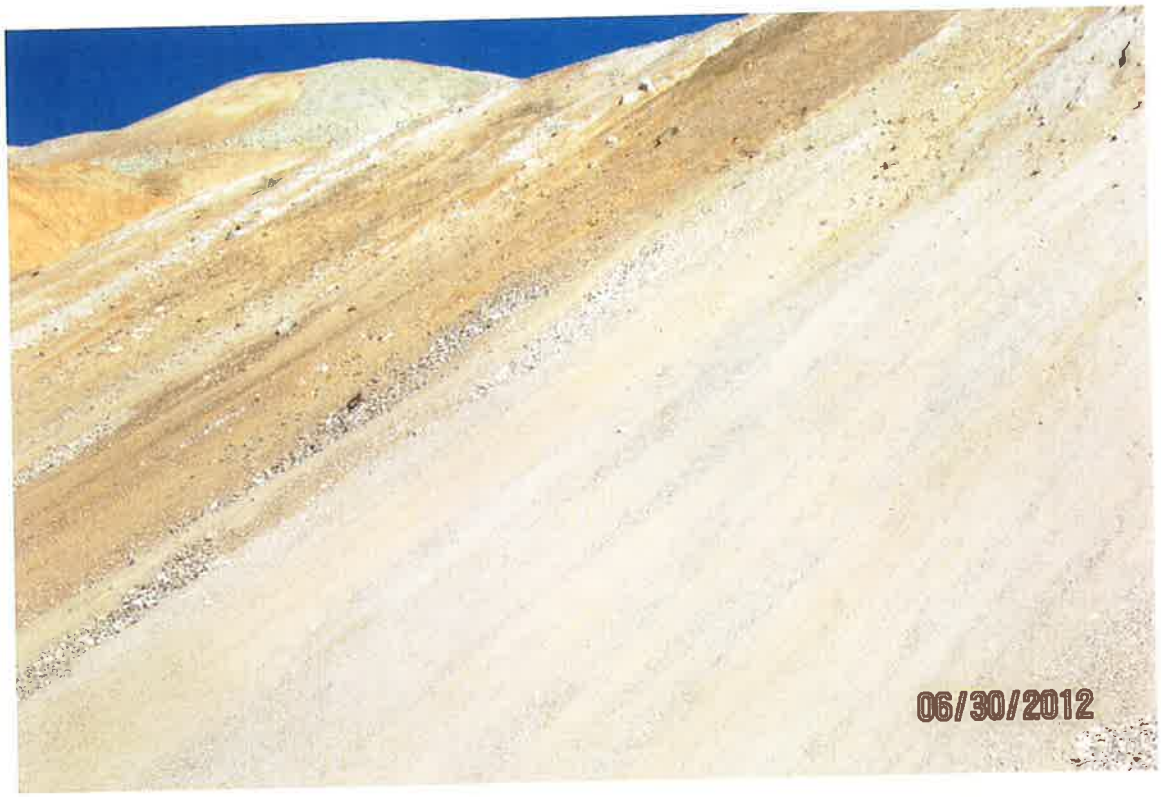
* Dump Expansion

* Cut-off Walls



Castro Gulch dump area rills filled after dump enlargement.





Upper Castro Gulch Mine Waste Dump Expansion